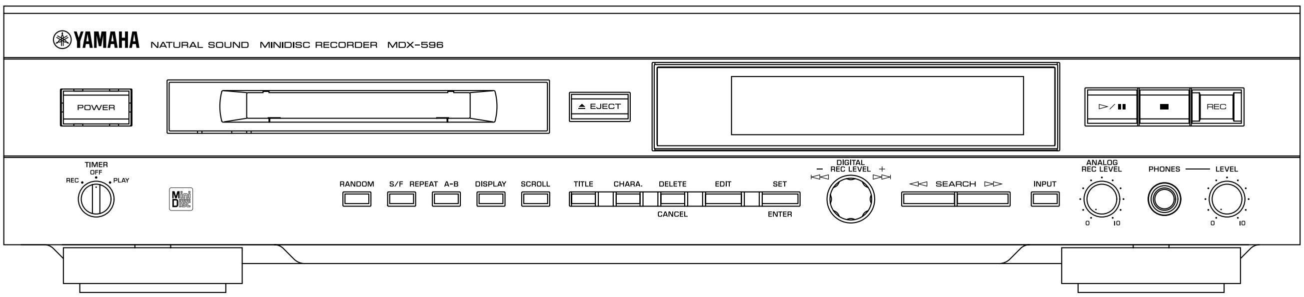
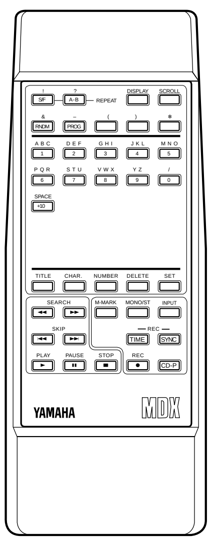
MINIDISC RECORDER

MDX-596

SERVICE MANUAL





IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel.
It has been assumed that basic service procedures inherant to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that all service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

■ CONTENTS

MDX-596

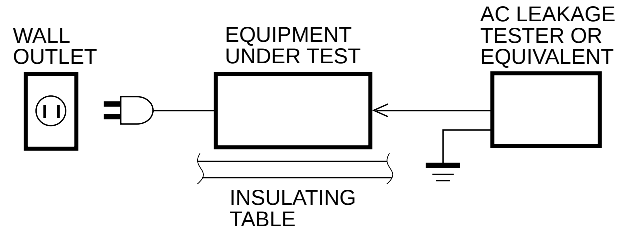
このサービスマニュアルは、エコマーク認定の再生紙を使用しています。
This Service Manual uses recycled paper.

100718

YAMAHA
YAMAHA CORPORATION
P.O.Box 1, Hamamatsu, Japan

■ TO SERVICE PERSONNEL

Critical Components Information
Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.



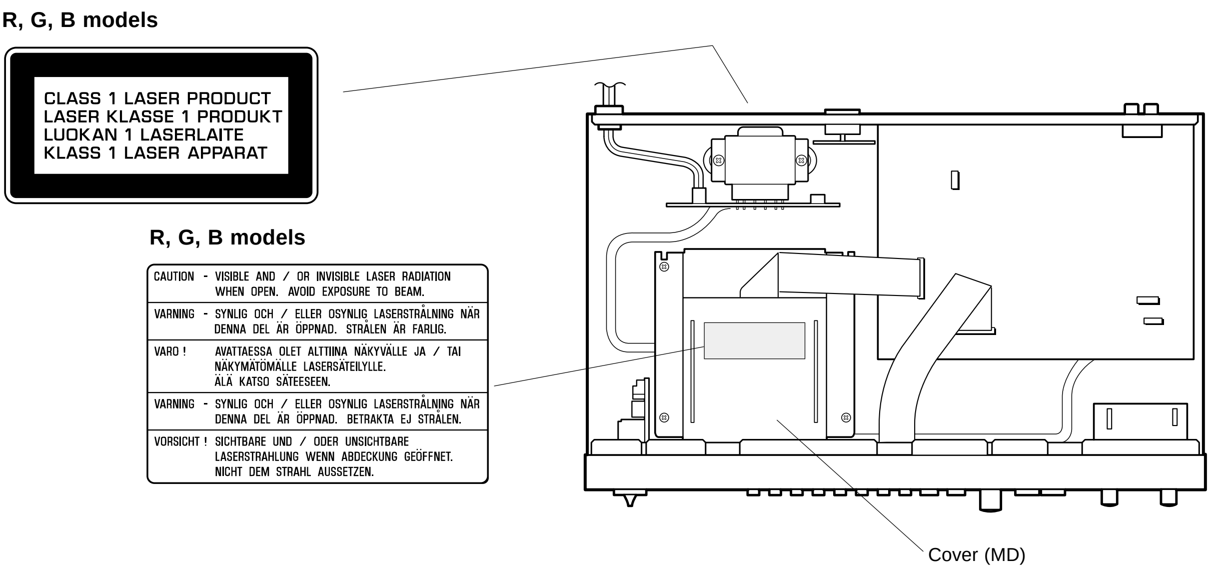
WARNING: Laser Safety

This product contains a laser beam component. This component may emit invisible, as well as visible radiation, which may cause eye damage. To protect your eyes and skin from laser radiation, the following precautions must be used during servicing of the unit.

1) When testing and/or repairing any component within the product, keep your eyes and skin more than 30 cm away from the laser pick-up unit at all times. Do not stare at the laser beam at any time.

2) Do not attempt readjustment, disassembly or repair of the laser pick-up, unless noted elsewhere in this manual.

3) CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



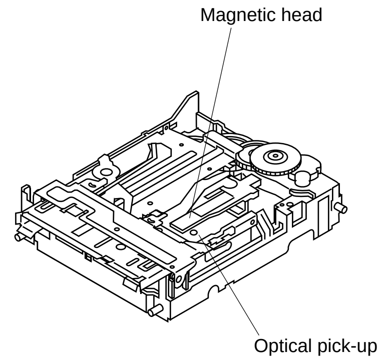
Laser Emitting conditions:

1) When the Cover (MD) is removed, and the POWER SW is turned to the "ON" position, the laser component will emit a beam for several seconds to detect if a disc is present. During this time (5-10 sec.), the laser may radiate through the lens of the laser pick-up unit. Do not attempt any servicing during this period!
If no disc is detected, the laser will stop emitting the beam. When a disc is set, you will not be exposed to any laser emissions.

2) The laser power level can be adjusted with the VR on the pickup PWB, however, this level has been set by the factory prior to shipping from the factory. Do not adjust this laser level control unless instruction is provided elsewhere in this manual. Adjustment of this control can increase the laser emission level from the device.

Laser Diode Properties

Material : GaAlAs
Wavelength : 785 nm
Emission duration : Continuous
Pulse Durations and Max. Output at the lens of the Laser Pick Up Unit ;
Read mode : 0.8 mW (Continuous)
Write mode : Max 10 mW for 0.5s, Min. Cycle 1.5s
ANSI Class : Class 1
* This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.

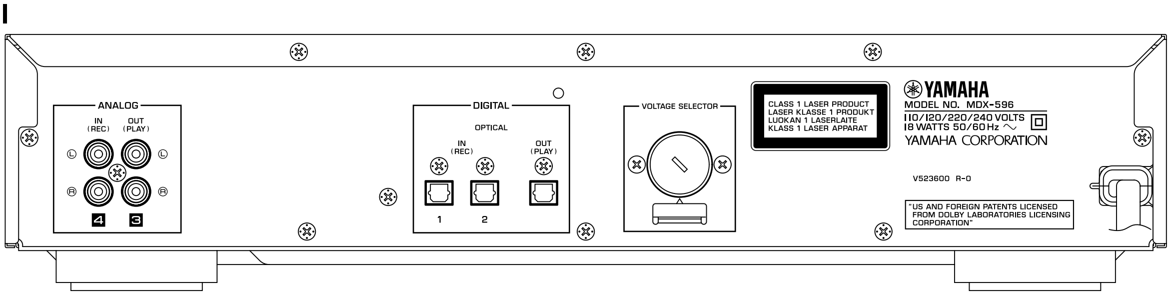


VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASER-SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

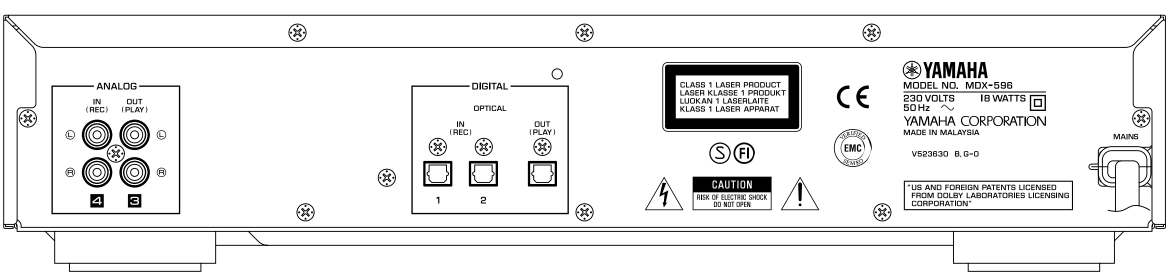
VARNING! : OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

■ REAR PANELS

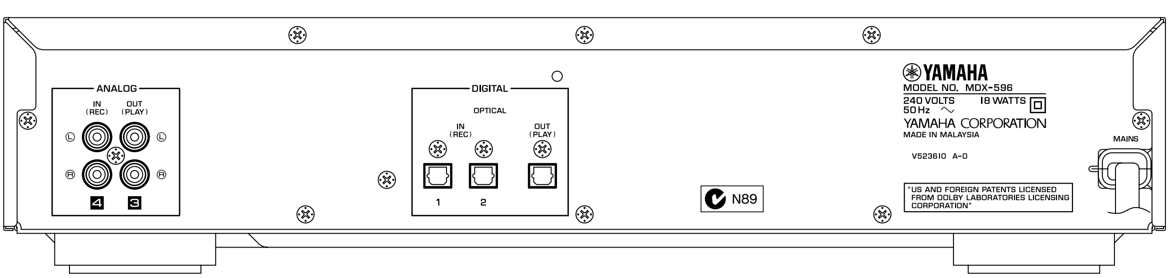
▼ R model



▼ G, B models



▼ A model



■ SPECIFICATIONS

Digital audio system

System
MiniDisc digital audio system
Disc
MiniDisc
Recording method
Magnetic field variation overwrite
Reading method
Non-contact optical pickup (using semiconductor laser)
Laser
Semiconductor laser
Laser Diode Properties
Material: GaAIAs
Wavelength: 785 nm
Pulse time:
Read mode ... 0.8 mW Continuous
Write mode ... max 10 mW 0.5S
min cycle 1.5S
Repetition
Record/playback time
Max. 80 minutes
80 minutes (stereo)
160 minutes (mono)
Revolutions
Approx. 400~900 rpm (CLV)
Error Correction
ACIRC (Advanced Cross Interleave Reed-solomon Code)
Sampling frequency
44.1 kHz (32 kHz and 48 kHz signals converted to 44.1 kHz for recording)
Coding
ATRAC (Adaptive TRansform Acoustic Coding)
Modulation system
EFM (Eight-to-Fourteen Modulation)
Number of channels
2 (stereo) or 1 (mono, for extended recording)
Frequency Response
5 ~ 20,000 Hz ±0.5 dB
Signal-to-Noise Ratio
More than 99 dB during playback
Wow and Flutter
Below measurable limit

Inputs

LINE IN (REC)
Type: pin jack
Input impedance: greater than 50 k-ohms
Standard input level: 300 mV
DIGITAL IN (OPTICAL) 1/2
Type: square optical connector jack

Outputs

LINE OUT (PLAY)
Type: pin jack
Standard output level: 2.0 ± 0.5 Vrms
DIGITAL OUT (OPTICAL)
Type: square optical connector jack
PHONES
Standard output level
(Input 150 ohms shorted, – 20 dB): 300 ± 60 mV

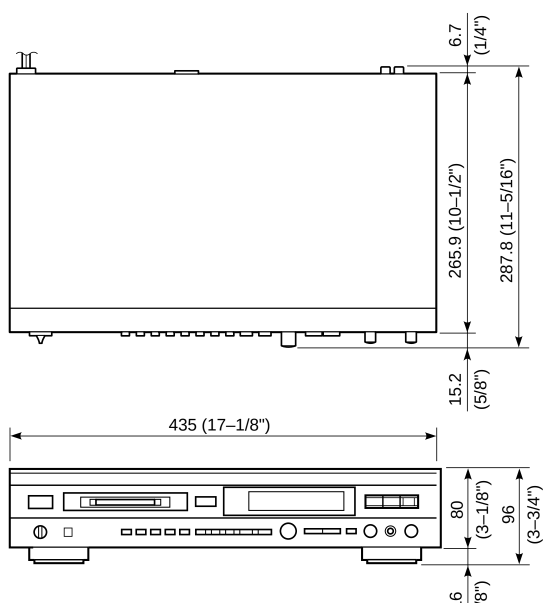
GENERAL

Power Supplies
A model AC 240 V, 50 Hz
G, B models AC 230 V, 50 Hz
R models AC 110/120/220/240 V, 50/60 Hz
Power Consumption
18 W
Dimensions (W x H x D)
435 x 96 x 288 mm (17-1/8" x 3-3/4" x 11-5/16")
Weight
4.0 kg (8 lbs. 13 oz.)
Finish
Titanium color/Black color
Accessories
Remote Control.... 1
Audio cord... 2
Optical cord... 1
Batteries (size AA, R6, UM-3).... 2

Specifications subject to change without notice.

R : General model ***A : Australian model***
B : British model ***G : European model***

* US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

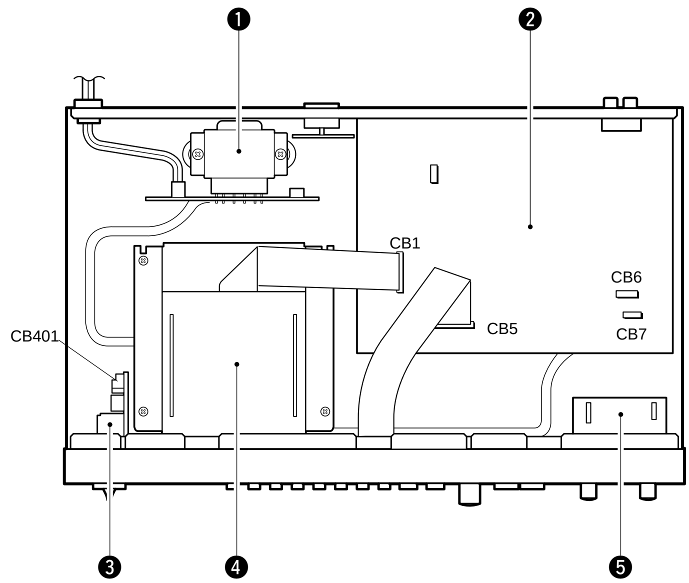


Units : mm (inch)

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■ INTERNAL VIEW

❶ POWER TRANSFORMER
❷ MAIN (1) P.C.B.
❸ POWER SWITCH
❹ MD RECORDER UNIT
❺ MAIN (2) P.C.B.



■ DISASSEMBLY PROCEDURES

(Remove parts in disassembly order as numbered.)

1. Removal of Top Cover
a. Remove 4 screws (①) and 3 screw (②) in Fig. 1.

2. Removal of Front Panel
a. Remove 4 connectors.
CB5, CB6, CB7, CB401
b. Remove 3 screws (③) in Fig. 1.
* **Arrow marks (⇒) are printed to identify the screws to be removed.**
c. Remove 2 screws (④) in Fig. 1.

3. Removal of MD Recorder Unit
a. Remove 1 connector.
CB1
b. Remove 4 screws (⑤) in Fig. 1.
c. Remove 4 screws (⑥) in Fig. 2.

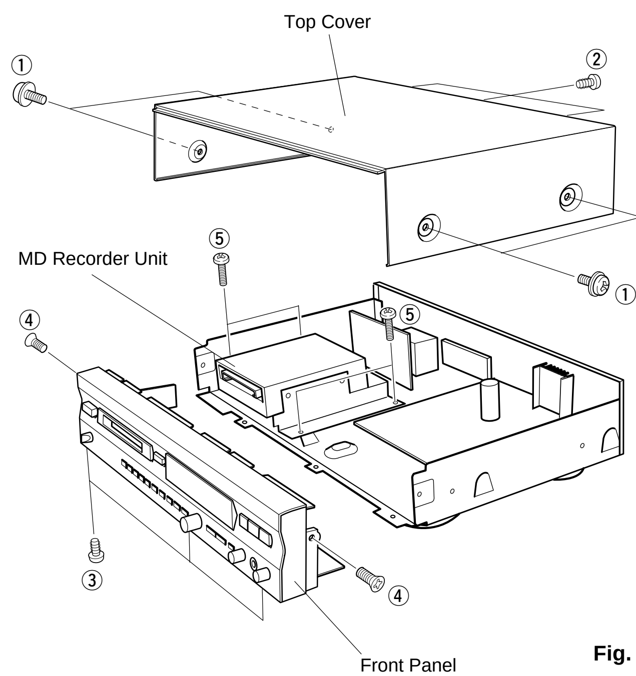


Fig. 1

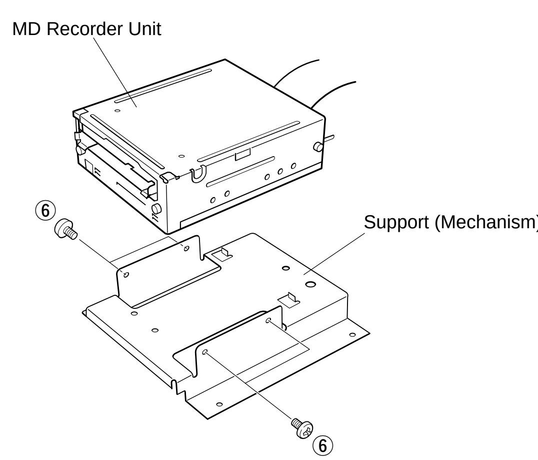


Fig. 2

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Disassembly of MD Recorder Unit

Remove the MD Recorder unit according to Steps 1 and 3 of the disassembly procedure (page 4).

Removal of MD Main P.C.B. and MD Mechanism (Fig. 3)

1. Remove 3 screws (K1) and then remove the Top Cover.
2. Remove 2 screws (K2) and then remove the Bottom Cover.
3. Disconnect 3 flat connecting cables (K3).
4. Disconnect the flexible P.C.B. for the optical pickup (K4).
5. Disconnect a connector (K5).
6. Remove 2 screws (K6) and then remove the MD Main P.C.B.
7. Remove the spring (K7).
8. Remove 1 screw (K8) and then remove the Side Cover.
9. Remove 4 cushions (K9) from the bosses of the MD Mechanism.

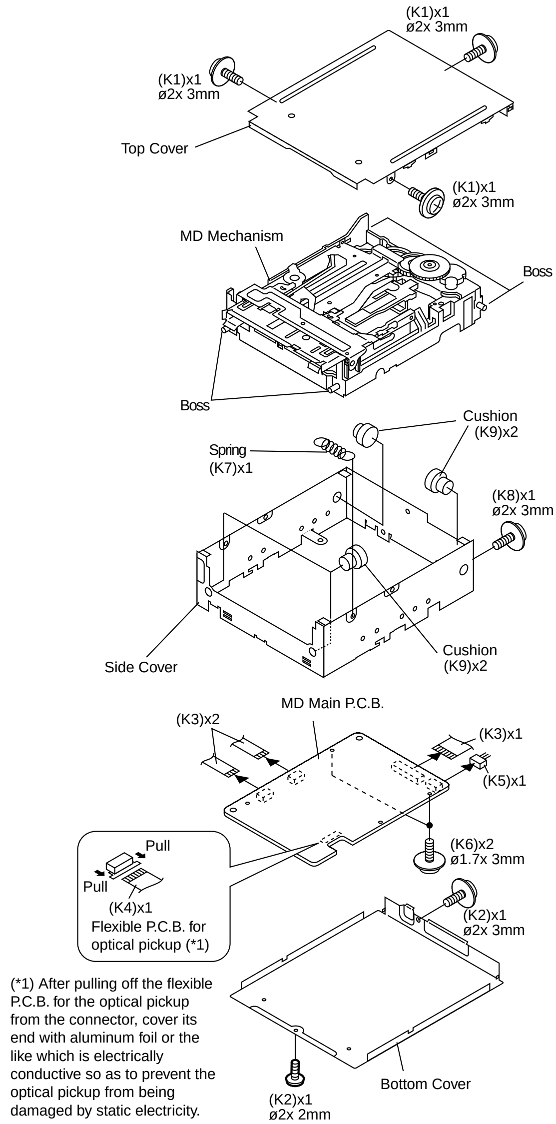


Fig. 3

Removal of Magnetic Head (Fig.4)

- Once the magnetic head is removed, it will be necessary to perform “Confirmation of magnetic head installation Position”. (See page 13.)

1. Remove screw (A1).

Caution

a. When removing the magnetic head, hold its base and do not touch the magnetic head itself or the leaf spring.
b. Place the magnetic head upside down.
c. Use special care so as not to cause any damage to the magnetic head when installing it.

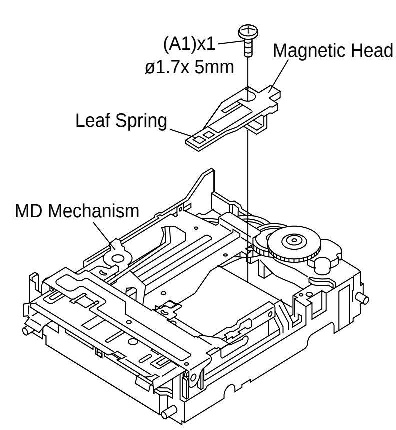


Fig. 4

Removal of MD Loading P.C.B./Loading Motor (Fig. 5)

1. Remove 1 screw (B1).
2. Remove 3 hooks (B2) and then remove the MD Loading P.C.B.
3. Remove 2 screws (B3) and then remove the Loading Motor.

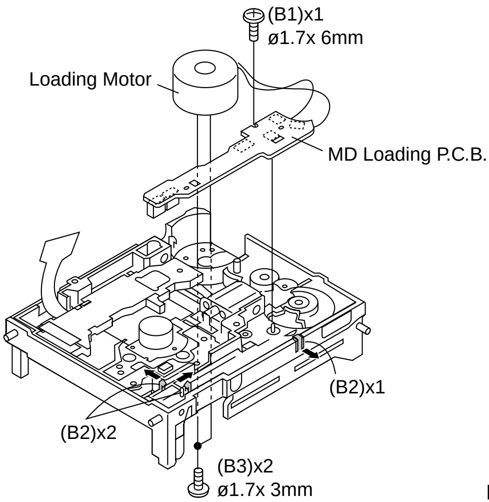


Fig. 5

Removal of Sled Motor/Optical Pickup Head (Fig. 6)

- Once the MD mechanism switch P.C.B. is removed, it will be necessary to perform "Adjustment of Lead-in Switch Position". (See page 13.)
- Once the optical pickup head is removed, it will be necessary to perform "Confirmation of magnetic head installation Position". (See page 13.)

1. Remove 3 screws (C1) and then remove the sled motor.
2. Remove the Optical Pickup Head.

Caution

Use care so as not to cause any damage to the gear. (The damaged gear will cause abnormal noise to occur while searching.)

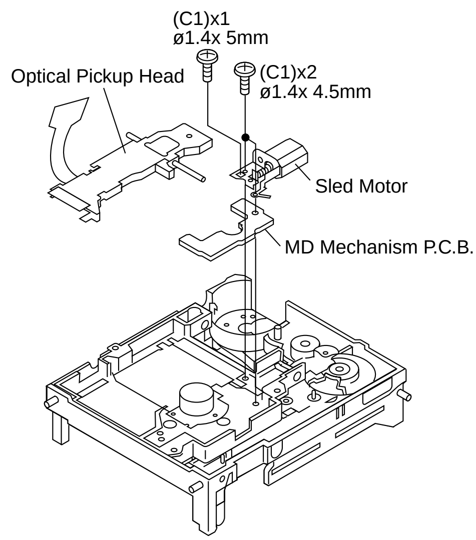


Fig. 6

Removal of Spindle Motor (Fig. 7)

- Once the spindle motor is removed, it will be necessary to perform "Pickup Rating". (See page 14.)

1. Remove 3 screws (D1) and then remove the Spindle Motor.

Caution

a. Be careful not to scratch the gear. **(Scratched gear will produce noises during searching.)** **b. As the turn-table is magnetized, keep foreign objects from being attracted.**

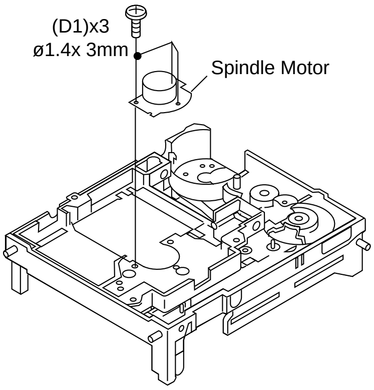


Fig. 7

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■ ADJUSTMENT & TEST MODE

Servicing Procedure

Perform adjustment and setup in the TEST mode. Specific adjustments and procedures vary depending on the type of servicing performed.

Type of servicing	Required item							
	TEMP standard setting	EEPROM setting value confirmation	AUTO preliminary adjustment	AUTO adjustment	AUTO AFB adjustment	EEPROM adjustment value entry (*1)	Operation confirmation (With AUTO main adjustment done in advance)	
	TEMP	EEPROM SET	AUT YOBI	AUTO AJST	AUT AFB	TEST mode cancel	TEST-PLAY	TEST-REC
PICKUP replacement	–	①	②	③	④	⑤	⑥	⑦
Magnetic head replacement	–	–	–	–	–	–	–	①
Mechanical unit replacement (including PICKUP)	–	①	②	③	④	⑤	⑥	⑦
MD main PCB replacement	①	②	③	④	⑤	⑥	⑦	⑧
MD microprocessor (IC1401) replacement	–	①	–	–	–	②	③	④
MD LSI (IC1201) replacement	–	–	①	②	③	④	⑤	⑥
RF IC (IC101) replacement	①	②	③	④	⑤	⑥	⑦	⑧
EEPROM IC (IC1402) replacement	①	②	③	④	⑤	⑥	⑦	⑧

Numbers in the table, e.g., ①, ②, ③, indicate the order in which required items should be performed.
"–" means that item needs not be performed.

(*1): The result of EEPROM entry is displayed at the end of the TEST mode.

OK_EEPROM: Both "setting value" and "preliminary adjustment completed" have been entered properly.

WR_EEPROM: The "setting value" has been entered properly but not "preliminary adjustment completed". Perform preliminary adjustment properly and then enter "preliminary adjustment completed".

NG_EEPROM: The "setting value" has not been entered. Check the MD microprocessor and EEPROM for connection.

Preparation before Adjustment

● **Test disc**

Type	Test disc
High reflecting disc	TDYS1 (SONY) [for reproduction] (P/No. TX945850)
Low reflecting disc	Commercially available mini disc for recording
Low reflecting disc	MMD-318 [for pre-adjustment] (P/No. AAX04890)
– – – – – – – –	Clear disc for checking the head (P/No. AAX18050)

● **Extension cable** (see connection diagram on page 14.)

Type	Part No.
1. Extension P.C.B. for servicing	AAX16660
2. 2-pin extension connector for servicing	AAX16620
3. 6-pin flat cable for servicing	AAX16640
4. 5-pin flat cable for servicing	TX946190
5. 28-pin flat cable for servicing	TX946220

TEST MODE

1. How to enter the test mode

1) Press the POWER button while pressing the SET/ENTER button and the PLAY/PAUSE button.
Version of microprocessor is displayed about 1 second.

tsm1C**e**

** (after e): Version of EEPROM protect data (from 01)
** (after C): Version of microprocessor ROM (from 01)

"EJECT" on display

2) Load either a disc for reproduction or a disc for recording.
"AUTO AJST" on display

2. How to set to each mode

Every time the DISPLAY (forward) or EDIT (reverse) button is pressed, the mode changes. (For operation of each mode, refer to the section describing each mode.)

AUTO_AJST (AUTO adjustment)
↓
AUT_AFB (AUTO AFB adjustment)
↓
RST_YOBI (RESULT preparation)
↓
RESULT (RESULT)
↓
MNU_YOBI (MANUAL preliminary adjustment)
↓
MNU_AJST (MANUAL adjustment)
↓
EEPROM_SET (EEPROM setting)
↓
AUT_YOBI (AUTO preliminary adjustment)
↓
(back to AUTO_AJST)

Since this mode is not required for servicing , proceed to another mode promptly.

● Panel keys used in TEST mode

Panel key	Function	Command code
REC	TEST mode end (entry of EEPROM)	1FH
EJECT	Eject	B3H
DISPLAY	Menu feeding in TEST mode (1) / (Feeding of menus mainly related to adjustment and EEPROM)	B2H
TITLE	Menu feeding in TEST mode (2) / (Feeding of menus mainly related to continuous playback and continuous recording)	B4H
CHARA.	Menu feeding in TEST mode (3) (Feeding of menus mainly related to INNER mode and JUMP SELECT)	F2H
EDIT	Menu feeding in reverse in TEST mode (Menu feeding in reverse in each TEST mode)	A8H
SET/ENTER	Finalization of menu selection or starting of its execution	A2H
DELETE/CANCEL	Stopping each test item and shifting to menu selection at one step upper level	A7H
SEARCH ▷	Forced feeding of the slide (in FWD direction) / Execution of JUMP function (FWD) ADDRESS setting value increased / Specification of direction when setting the tracking	AAH
SEARCH ◁◁	Forced feeding of the slide (in REV direction) / Execution of JUMP function (REV) ADDRESS setting value reduced / Specification of direction when setting the tracking	ACH
JOG DIAL ▷▷|	Forced feeding of the disc to EJECT / setting value increased	F3H
JOG DIAL |◁◁	Forced feeding of the disc to LOAD / setting value reduced	F4H
INPUT	Switching of laser power at EJECT / switching of display for continuous playback / switching of digit setting when setting ADDRESS	F5H
RANDOM	–	
REPEAT S/F	–	
REPEAT A-B	–	
SCROLL	–	
PLAY/PAUSE	–	
STOP	–	

3. How to cancel test mode (Entry of EEPROM adjustment value)

1) Be sure to perform AUTO preliminary adjustment, AUTO adjustment and AUTO AFB adjustment.
("COMPLETE" appears on the display)
2) After completing above ajustments, press the REC button. (Entry to EEPROM initiates then.)
The TEST mode is completed. ("Test End" appears on the display)
3) Press the EJECT button to take out the disc.
4) Turn off the power.

Description of TEST modes

1. EJECT mode [_ _ EJECT _ _ _]	To TEMP setting (of EEPROM setting) To CONTROL setting (of EEPROM setting) Laser power setting (record/reproduction power) is performed.
2. AUTO preliminary adjustment mode [_ AUT _ YOBI _]	Automatic preliminary adjustment is performed. Adjusted values are output by using the interface.
3. AUTO adjustment mode [AUTO _ AJST _]	Automatic adjustment is performed. (Grating adjustment mode after this adjustment.) Adjusted values are output by using the interface. Continuous reproduction is performed. (Error rate on display, jump test)
4. AUTO AFB adjustment mode [_ AUT _ AFB _ _]	Automatic focus balance adjustment is performed. Adjusted values are output by using the interface.
RESULT preparation mode [_ RST _ YOBI _]	Not used (Do not use this function as it is not for servicing)
RESULT mode (main adjustment) [_ RESULT _ _ _]	Not used (Do not use this function as it is not for servicing)
MANUAL preliminary adjustment mode [_ MNU _ YOBI _]	Not used (Do not use this function as it is not for servicing)
MANUAL adjustment mode [_ MNU _ AJST _]	Not used (Do not use this function as it is not for servicing)
5. EEPROM setting mode [EEPROM _ SET]	Various factors of the digital servo function are changed manually. The voltage is measured at the temperature detect terminal and the standard value is set.
6. TEST-PLAY mode [TEST _ PLAY _]	Continuous reproduction from the specified address is performed. C1 error rate is measured and ADIP error rate is measured.
7. TEST-REC mode [TEST _ REC _ _]	Continuous recording from the specified address is performed.
8. INNER mode [_ _ INNER _ _ _]	The position where the INNER switch is turned ON is measured.

1. EJECT mode

Step	Setting method	Remark	Display
1	EJECT status in the TEST mode	EJECT menu (No disc is loaded.)	[_ _ EJECT _ _ _]
2	Press the INPUT button.	Reproduction power output status	[ppw _ _ _ _ _ _ _]
3	Press the INPUT button.	Recording power output status	[rpw _ _ _ _ _ _ _]
4	Press the INPUT button.	Since this mode is not required for servicing , proceed to another mode promptly.	[xpw _ _ _ _ _ _ _]
5	Press the TITLE edit button.	To TEMP setting (Refer to TEMP setting)	[TEMP _❍ ❍ _◆ ◆]
6	Press the CHARA. button.	To CONTROL1 setting	[CONTROL1 _ 08]
7	Press the DISPLAY button.	To CONTROL2 setting	[CONTROL2 _ 02]
8	Press the DELETE/CANCEL button.	EJECT menu	[_ _ EJECT _ _ _]

Check procedure	Mode	Check item (Pin 3 of IC1401)	Judgement	Possible cause and check content
①	Playback power output “ppw”	DC 0.2V	OK (Move on to check ②.)	–
		DC 1.5V	NG	Perform *1.
②	Recording power output “rpw”	DC 1.8V	OK (End of checking.)	–
		Less than DC1.5V	NG	Perform *2.
	“rpw” not achieved.	–	NG	Perform *1.

*1: Poor soldering of the line at Pin 100 of IC1401.
Check the line of Pin 93 of IC1401 for short and poor soldering. (Check all the way to the SW P.C.B.)
*2: Check the line of Pin 3 of IC1401 for poor soldering and short with other patterns.
Check the pick-up laser for breakage.

● Confirmation of pick-up laser power

Recording and reproduction can be checked by using the laser power meter. However it should be used for checking only because there is variation in its measurement.
When the measured value is excessively deviated from the reference value, replace the pick-up.

Reference value (measured at room temperature of 25 °C)
During reproduction (ppw) : 0.72 ± 0.1 mW
During recording : 5.5 ± 0.5 mW

Note : Be very careful when using the laser power meter. The laser beam would cause damage to your eye if exposed to it directly.

● TEMP (temperature standard) setting

(Make this setting quickly when the room temperature is within the range of 21 ˚C to 29 ˚C and the P.C.B. is cold.)

(1) Set to the TEMP setting mode menu.
[TEMP ❍❍ ◆◆]
❍❍ : Temperature measured value
◆◆ : Temperature setting value

(2) Make temperature correction based on the ambient temperature and according to the following table.

Ambient temperature	Correction value
+ 21.0 ˚C ~ + 23.2 ˚C	– 1H
+ 23.3 ˚C ~ + 26.8 ˚C	± 0H
+ 26.9 ˚C ~ + 30.7 ˚C	+ 1H

Example : When the temperature measured value is 7AH and the ambient temperature is 22 ˚C:
7AH (measured value) - 01H (correction value) = 79H (setting value)
* If the temperature measured value deflects between two values, use the smaller value (If 7AH and 79H in the above example, use 79H.)

(3) Using the jog dial, match the value obtained in Step (2) with the temperature setting value.

Example : When the temperature measured value is 7AH and the ambient temperature is 22 ˚C:
[TEMP 7A 79]
Temperature setting value

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2. AUTO preliminary adjustment mode Disc in use: MMD-318 [for pre-adjustment]

Step	Setting method	Remark	Display
1	Set the Test mode.	No disc is loaded.	[EJECT]
2	Load a disc.	 Auto adjustment menu	[LOADING] [AUTO _ AJST _]
3	Press the EDIT button once.	Auto preliminary adjustment menu	[_ AUT _ YOBI _]
4	Press the SET/ENTER button once. Adjusted values are output. Adjustment is completed.	Auto preliminary adjustment is started after sliding to the innermost track. " *** " changes in the following order during automatic adjustment. HAo -> .... -> TCO Proceed to Step 5 when adjustment is OK. Proceed to Step 6 when adjustment is NG.	[*** : _ _ _ _ _ _] [_ COMPLETE _] [Can't _ ADJ.]
5	When adjustment is OK, press the DELETE/CANCEL button.	The display returns to the AUTO preliminary adjustment menu.	[_ AUT _ YOBI _]
6	When adjustment is NG, press the DELETE/CANCEL button.	There is an abnormality at the adjusted point such as HAo. Refer to "Troubleshooting". (page 20)	[Can't _ ADJ.]

3. AUTO adjustment mode Disc in use: TDYS1 (SONY) [for reproduction] or commercially available mini disc for recording

Step	Setting method	Remark	Display
1	Set the TEST mode.	No disc is loaded.	[EJECT]
2	Load a disc.	 AUTO adjustment menu	[LOADING] [AUTO _ AJST _]
3	Press the SET/ENTER button once. Adjusted values are output. Adjustment is completed.	Automatic adjustment is started after sliding to the innermost track. " *** " changes in the following order when a high reflecting disc (disc for reproduction) is used. PEG -> HAG " *** " changes in the following order when a low reflecting disc (disc for recording) is used. PEG -> LAg -> GCG -> GEG -> LAG Proceed to Step 4 when adjustment is OK. Proceed to Step 6 when adjustment is NG.	[*** : _ _ _ _ _ _] [_ COMPLETE _] [Can't _ ADJ.]
4	When adjustment is OK, press the SET/ENTER button.	Continuous reproduction (bit section) (Address + C1 error display) Continuous reproduction (group section) (Address + C1 error display)	[s XXXX c YYYY] [a XXXX c YYYY]
5	Press the INPUT button. Press the DELETE/CANCEL button.	Continuous reproduction (group section) (Address + ADIP error display) Display returns to the AUTO adjustment menu display.	[a XXXX a YYYY] [AUTO _ AJST _]
6	When adjustment is NG, press the DELETE/CANCEL button.	There is an abnormality at the adjusted point such as PEG. Refer to "Troubleshooting". (page 20)	[Can't _ ADJ.]

Note) *** : Adjustment name, XXXX: Address, YYYY: Measured value

4. AUTO AFB adjustment mode Disc in use: Commercially available mini disc for recording

Step	Setting method	Remark	Display
1	Set the Test mode.	No disc is loaded.	[EJECT]
2	Load a disc.	 Auto adjustment menu	[LOADING] [AUTO _ AJST _]
3	Press the DISPLAY button once.	Auto AFB adjustment menu	[_ AUT _ AFB _ _]
4	Press the SET/ENTER button once.	Auto AFB adjustment is started. Adjusted values are output.	[FAB YY _ ZZZZ] [YY _ ZZZZ _ _ _]
5	Press the DELETE/CANCEL button.	The display returns to the AUTO AFB adjustment menu.	[_ AUT _ AFB _ _]

Note) YY, ZZZZ: Measured value

MDX-596

5. EEPROM setting mode **Disc in use: Commercially available mini disc for recording**

(used to confirm/adjust setting values)

Refer to p.15 for EEPROM setting.

6. TEST-PLAY mode **Using the disc: Commercially available mini disc for recording**

(Use this mode to check that the playback function is provided at the specified address.)

Step	Setting method	Remark	Display
1	Load a disc.	AUTO adjustment menu	[AUTO _ AJST _]
2	Press the TITLE button.	TEST-PLAY menu	[TEST _ PLAY _]
3	Press the INPUT button.	ADDRESS setting (The initial value of the target address is displayed.)	[ADRES _ 0032]
4	Press the SET/ENTER button.	Continuous reproduction (bit section) (Address + C1 error display) Continuous reproduction (group section) (Address + C1 error display)	[s XXXX c YYYY] [a XXXX c YYYY]
5	Press the INPUT button.	Continuous reproduction (group section) (Address + ADIP error display)	[a XXXX a YYYY]
6	Press the DELETE/CANCEL button.	TEST-PLAY menu	[TEST _ PLAY _]

- Every time the TITLE button is pressed in the address setting mode, the address changes in the order of 0032-> 03C0 -> 0700 -> 08A0 -> 0950 -> —
- Pressing the DISPLAY button in the TEST-PLAY menu changes to the AUTO adjustment menu.

7. TEST-REC mode **Disc in use: Commercially available mini disc for recording**

(It is used to check the REC function at the specified address.)

Step	Setting method	Remark	Display
1	Load a disc.	AUTO adjustment menu	[AUTO _ AJST _]
2	Press the TITLE button twice.	TEST-REC menu	[TEST _ REC _ _]
3	Press the SET/ENTER button.	ADDRESS setting (The initial value of the address is displayed.)	[a0032 _ pw ZZ]
4	Press the SET/ENTER button.	Continuous recording	[a XXXX _ pw ZZ]
5	Press the DELETE/CANCEL button.	TEST-REC menu	[TEST _ REC _ _]

- Every time the TITLE button is pressed in the address setting mode, the address changes in the order of 0032-> 03C0 -> 0700 -> 08A0 -> 0950 -> —
- Pressing the DISPLAY button in the TEST-REC menu changes to the AUTO adjustment menu.

8. INNER mode **Disc in use: Commercially available mini disc for recording**

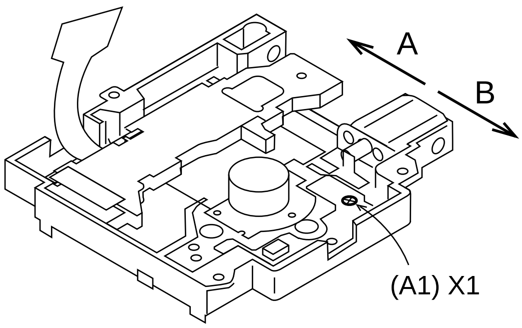
Step	Setting method	Remark	Display
1	Load a disc.	AUTO adjustment menu	[AUTO _ AJST _]
2	Press the CHARA. button.	INNER menu	[_ _ INNER _ _ _]
3	Press the SET/ENTER button.	INNER switch position is measured. (Both SUBQ address and C1 error are displayed.)	[s XXXX c YYYY]
4	Press the DELETE/CANCEL button.	INNER menu	[_ _ INNER _ _ _]

- Pressing the DISPLAY button in the INNER menu changes to the AUTO adjustment menu.

● Lead-in switch position adjustment

Adjust the lead-in switch position so that it is between FF85 and FFD2.

1. Load a TDYS1 (SONY) (P/No. TX945850) disc for reproduction.
2. Loosen the screw (A1) (1 pc) attaching the mechanical switch P.C.B.
3. Retighten the screw (A1) (1 pc) while pressing the mechanical switch P.C.B in the arrow A direction in the figure for FF85 or less and in the arrow B direction for FFD2 or more.
   Measure the lead-in switch position again and check that it is in the range between FF85 and FFD2.



Note) Apply thread lock to the screw (A1) (1 pc) of the P.C.B. after tightening it.

Fig.8

● Forced rotation of loading motor

It is possible to force the loading motor to rotate by turning the jog dial when the microprocessor version (tsm1C**e**) of the test mode or EJECT appears on display. (This is used when the disc cannot be ejected.)

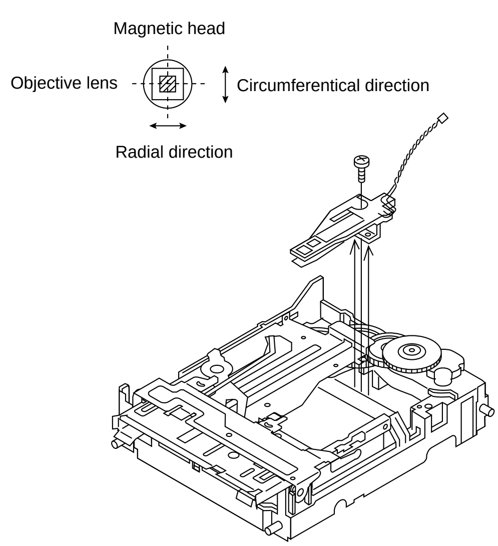
JOG DIAL ▷▷| : Forced feeding of the disc to EJECT
JOG DIAL |◁◁ : Forced feeding of the disc to LOAD

* To obtain the microprocessor version on display when a disc is loaded, " AUTO _ AJST _ " appears on display. Press the DELETE/CANCEL key in this state, and the microprocessor version will appear.

● Confirmation of magnetic head installation position

- After replacing the magnetic head and the optical pick-up, be sure to confirm their installation positions.
- To facilitate adjustment of their installation positions, bring the optical pick-up to the center position and follow the procedure described below.

1. Load a clear disc (P/No. AAX18050) for checking the head.
2. Push down the up-shift arm of the magnetic head with a finger to raise the magnetic head.
3. Looking at the unit from above, check if the magnetic head matches with the optical pick-up objective lens.
4. Check to ensure that the magnetic head moves up and down smoothly.



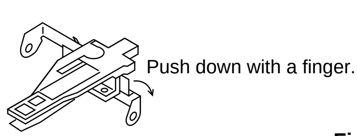


Fig.9

MECHANISM ADJUSTMENT

When making an adjustment, be sure to connect an extension cable for servicing and an expansion P.C.B. as shown in Fig.12.

1. Optical pickup rating inspection method

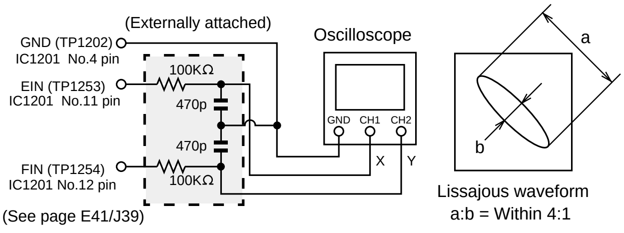


Fig. 10

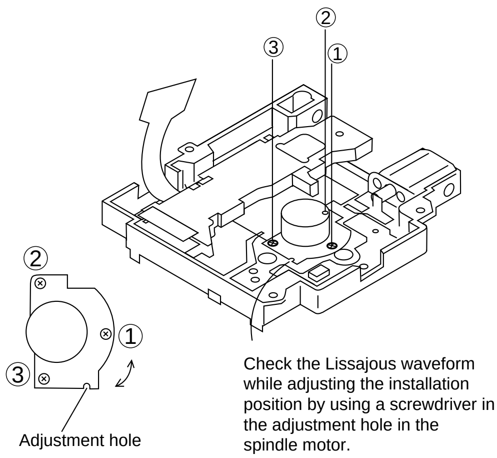


Fig. 11

After performing automatic adjustment in the AUTO mode selected from the test mode by using a TDYS1 (SONY) (P/No. TX945850) disc for reproduction (COMPLETE status on display), adjust the EOUT to FOUT Lissajous waveform (x-y).

1. Loosen 3 screws of the spindle motor a little and make adjustment while watching the Lissajous waveform.
2. After adjustment, tighten screws in the order of (①), (②) and (③).

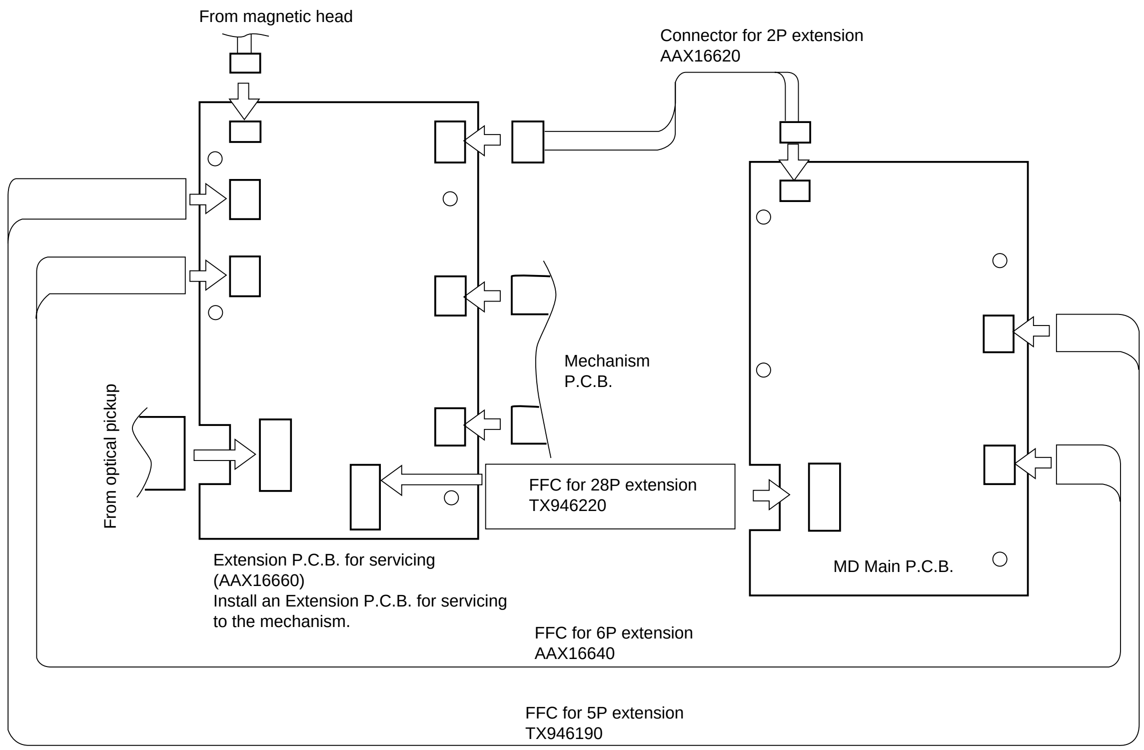


Fig. 12

5. EEPROM setting mode   Disc in use: Commercially available mini disc for recording

(used to confirm/adjust setting values)

1) Start the TEST mode.
2) Load the disc.
   [AUTO AJST]
3) Press the DISPLAY button 6 times.
   [EEPROM SET]
4) Execute the procedure to have "EEPROM setting mode transition diagram" displayed and adjust the jog dial so that the same setting values as those in "EEPROM contents list" are obtained.
   (Refer to p.10 for TEMP setting.)
5) Press the REC button to cancel the TEST mode.
   (Entry into EEPROM can be started here.)
6) Set to the TEST mode again and perform AUTO preliminary adjustment, AUTO adjustment and AUTO AFB adjustment.

EEPROM SETTING MODE TRANSITION DIAGRAM



Note) To return to the SUB MENU or MAIN MENU display of the test mode, press the DELETE/CANCEL button.

EEPROM CONTENTS LIST

● **Focus setting (Focus)**

Item on display	Set value
FG ❍ ❍	B1 H
FF0 ❍ ❍	10 H
FF1 ❍ ❍	70 H
FF2 ❍ ❍	E0 H
FZHLEV ❍ ❍	ED H
FOKLEVh ❍ ❍	07 H
FOKLEVL ❍ ❍	09 H
FOSTn ❍ ❍	2C H
DISCJG ❍ ❍	14 H

● **Spin setting (Spindle)**

Item on display	Set value
SPG ❍ ❍	10 H
SPG-in ❍ ❍	5C H
SPG-mid ❍ ❍	48 H
SPG-out ❍ ❍	38 H
SP1 ❍ ❍	10 H
SP2 ❍ ❍	93 H
SP3 ❍ ❍	ED H
SP4 ❍ ❍	EE H
SP5 ❍ ❍	20 H
SPDLIM ❍ ❍	64 H
SPKLEVm ❍ ❍	15 H

● **Tracking setting (Tracking)**

Item on display	Set value
TG ❍ ❍	6B H
TF0 ❍ ❍	10 H
TF1 ❍ ❍	6B H
TF2 ❍ ❍	F0 H
FT3 ❍ ❍	08 H
SVCNT4 ❍ ❍	01 H
TRBLVo ❍ ❍	68 H
TRBLVt ❍ ❍	50 H
TRKLVo ❍ ❍	60 H
TRKLVt ❍ ❍	2E H
TDPWo ❍ ❍	67 H
TDPWt ❍ ❍	21 H
SLCTo ❍ ❍	00 H
SLCTt ❍ ❍	50 H
SLCTm ❍ ❍	53 H
TCRSC1P ❍ ❍	16 H
TCRSC0h ❍ ❍	00 H
TCRSC0L ❍ ❍	FA H
TCRSCHh ❍ ❍	02 H
TCRSCHL ❍ ❍	02 H
COTLVP ❍ ❍	05 H
COTLVr ❍ ❍	15 H
JPint ❍ ❍	00 H
KIK10 ❍ ❍	64 H

● **Slide setting (Sled)**

Item on display	Set value
SLG ❍ ❍	3E H
SL2 ❍ ❍	10 H
SLDLIM ❍ ❍	7F H
SLDLEV ❍ ❍	12 H
SLKLVk ❍ ❍	55 H
SLKLVt ❍ ❍	2E H
SLKLVm ❍ ❍	55 H
SLBKm ❍ ❍	08 H
SLKrio ❍ ❍	60 H
SLKroi ❍ ❍	68 H
SLK1io ❍ ❍	68 H
SLK1oi ❍ ❍	60 H

● **Control setting (Control)**

Item on display	Set value
CONTROL1 ❍ ❍	08 H
CONTROL2 ❍ ❍	02 H
ADJTTM ❍ ❍	14 H
HDEQAD ❍ ❍	92 H
LDEQAD ❍ ❍	8E H
GDEQAD ❍ ❍	91 H
MDEQBC ❍ ❍	8C H
LDEQBC ❍ ❍	8F H
GDEQBC ❍ ❍	8A H
HALSG ❍ ❍	11 H
LALSG ❍ ❍	11 H
GALSG ❍ ❍	11 H
HALSOFS ❍ ❍	FC H
LALSOFS ❍ ❍	00 H
GALSOFS ❍ ❍	00 H

● **Adjust setting (ADJSET)**

Item on display	Set value
COK ❍ ❍	58 H
FAT ❍ ❍	C0 H
TAT ❍ ❍	3E H
CAT ❍ ❍	40 H
FAB ❍ ❍	5C H
STR ❍ ❍	0B H
SFS ❍ ❍	0D H
STC ❍ ❍	0D H

■ SPECIAL TEST MODE

● How to set to the special test mode

Press the POWER button while pressing the SET/ENTER button and the STOP button. Then all the indicators will light up.

● Operation procedure

Every time the SET/ENTER button is pressed, lighting of indicators and items on the display change as follows.

1) All indicators light up.
2) All indicators turn off.
3) Segments not sharing the border light up.
4) Above segments turn off and other segments light up.
5) The date when the software was entered appears on the display.
6) The version of the micro processor appears on the display. [CPU Ver:TP03]
7) The time of auto-marking appears on the display. [AM Time :C8h]
8) The analog level of auto-marking appears on the display. [AM Lvl_A:24h]
9) The digital level of auto-marking appears on the display. [AM Lvl_D:1Ah]
10) The parameter of the bit distribution during recording on the display. [Rec Bit0:C0h]
11) The parameter of the bit distribution during recording on the display. [Rec Bit1:FEh]
12) Write/read check for EEPROM appears on the display [EE W/R Check]

When the INPUT button is pressed at this point, whether the micro processor executed data write/read function into EEPROM or not is checked.

If [OK] appears on the display and the pin 6 of IC6 is at “H”, the check result is satisfactory.

[NG] is displayed when there is an error while writing or reading the data.

In such a case, check EEPROM (IC7).

● How to cancel the special mode

Press the STOP button, and the mode will change from the special test mode to the factory preset mode and the data in RAM will be cleared.

Note : Turning off the power will cancel the special test mode but will not clear the data in RAM (ie., user settings are maintained).

Data to write in EEPROM (IC7)	Initial settings
INPUT mode	ANALOG
REPEAT mode	OFF
RANDOM mode	OFF
PROGRAM mode	OFF
REC mode (STEREO/MONO)	STEREO
AUTO MARK/MANUAL	AUTO (“MANUAL” does not light up.)
DISPLAY mode	DISC TITLE

■ ERROR DISPLAY

Error on display	Description	Countermeasure
Can't REC	• DEFECT occurred 10 times continuously during REC-PLAY. • Recordable cluster became “0” due to occurrence of DEFECT during REC-PLAY. • REC mode cannot be set for 20 seconds even after repeatedly trying to read the read disabled address.	• Check that the disc is free from any scratch, dust, finger print, black spot, etc. and that decentering, face deflection, etc. are not excessive.
Can't Copy	• One of the following judgments has been made depending on the channel status of the digital signal input from D-IN during REC-PAUSE or REC-PLAY. (1) Other than audio (2) Other than civil purpose (3) Copy NG due to reversed COPY bit of CD (ie., copy protected)	• Check if the CD is a copy inhibited on (e.g., CD-R, etc.)
DIGin Unlock	• Either of the following symptoms occurred for the digital signal input from D-IN during REC-PAUSE or REC-PLAY. (1) Digital IN PLL is unlocked. (2) Locked under conditions other than FS=44.1kHz.	• Check that the D-IN signal line is free from abnormality.
TOC Full	• No space is left to register music No and character data (song name, disc name, etc.) while the REC-PLAY function is used. • No recordable space is left when trying to activate the REC-PAUSE function.	• Use a disc for recording and reproduction with a space left to register UTOC.
UTOC ERR R	• “FTNO > LTNO” occurred. • “FTNO = 0 or 1” occurred. • UTOC recorded in the disc could not be read.	• As an abnormality exists in the UTOC data, use another disc.
UTOC ERR A	• “Start address > end address” occurred.	
UTOC ERR L0 ~ 4	• Any one of the UTOC0 ~ 4 data was looped.	
Not Audio	• Data not for audio purpose is recorded in the track mode of TNO which is currently selected.	• Select another TNO or use another disc.
Disc Full	• No recordable space is left when trying to activate the REC-PAUSE function.	• Use another disc for recording with a recordable space left.
Playback MD	• The loaded disc was for reproduction only when trying to activate the REC-PAUSE function or trying to edit.	• As the loaded disc is for reproduction only, use a disc for recording.
Protected	• Recording or editing was attempted while the data protector of the disc for recording and reproduction is set to the data protected state. • Editing the track subject to write protect function was attempted by using the data written in UTOC.	• Try again with the data protector set to the original position. • As the track to be edited is write protected, try again with another track.

Error on display	Description	Countermeasure
Can' t Edit	• Editing conditions were not satisfied with respect to each editing function.	• Wrong operation procedure was used. Try again by using the correct procedure.
TMP Over!!	• The temperature in the set (MD unit) went up excessively high due to occurrence of some abnormality.	• Check according to troubleshooting. • Check the temperature of the area where the unit is used.
DISC ERR R DISC ERR S DISC ERR W	• The data was not correct or it was not possible to read it correctly. • Recording the music data failed as an abnormality occurred while recording it.	• Use another disc as there is an abnormality in TOC or UTOC data or the disc has a scratch or other faulty condition.
TOC ERR S TOC ERR R	• The TOC data was not correct. • It was not possible to read the TOC data.	• The TOC data recorded in the disc is not in compliance with the MD standard. • Use another disc as the disc has a scratch or other faulty condition.
U TOC W ERR	• It was not possible to rewrite UTOC correctly and an abnormality occurred while rewriting it.	• Use another disc as the disc has a scratch or other faulty condition.
FOCUS ERR	• The disc was loaded but it was not possible to achieve FOCUS.	• Check that the disc is free from any scratch, dust, finger print, black spot, etc. and that decentering, face deflection, etc. are not excessive.
BLANK DISC	• The total number of TNO and NAME characters was “0” as a result of reading UTOC.	• Check if the disc is recordable by actually recording.
TOC W ERROR	• UTOC can be read but cannot be rewritten.	• Check if the recording head contacts properly and if wiring from the circuit board to the recording head is free from breakage.
EEPROM ERROR	• The EEPROM data is not correct	• Try again after resetting and if still NG, replace EEPROM.

Mechanism Error

Error on display	Description
Er_MD2_*	The head fails to move up.
Er_MD3_*	The head fails to move down.

		HINF (IC1401 No.93 pin)
* = E	Eject completed position	< 1.0 V
* = M	Horizontal midway position	> 3.01 V
* = L	Load completed position	1.31 — 2.36 V
* = D	Head down position	1.01 — 1.31 V

■ TROUBLESHOOTING

When MD fails to operate

When the objective lens of the optical pickup becomes dirty, MD may fail to operate. Clean the objective lens first and check MD for reproduction function. If it still fails to operate, check according to the following flow charts.
Contaminant on the pickup lens such as dust or other foreign matter may cause the pickup to skip or the TOC (content of the selection) not to be displayed. Check if the lens is clean before making adjustments. If the lens is dirty, clean it as follows.

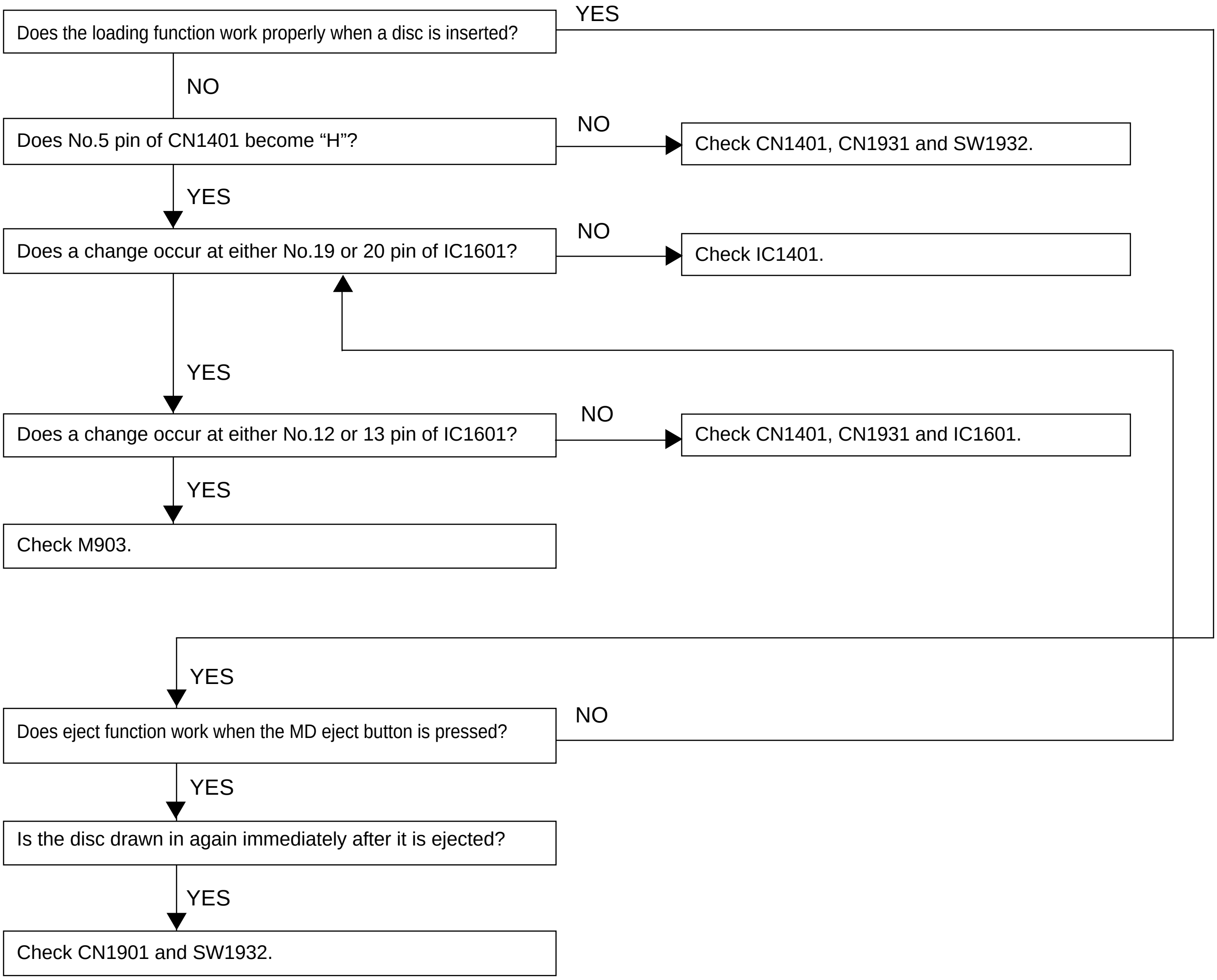
- Turn off the power. Dampen the lens cleaning paper with a small amount of isopropyl alcohol and wipe the lens with it, using care not to cause any damage to the lens. Be sure not to touch the lens with your hand directly.

Does the power turn on when the POWER button of the main unit is pressed? — NO → Check the trouble item “Power fails to turn on”.
↓ YES
Does the disc loading function work properly? — NO → Check the trouble item “Disc cannot be loaded properly.”.
↓ YES
Is the play mode available when the PLAY/PAUSE button is pressed? — NO → Check the trouble item “Play mode is not available.”.
↓ YES
Is appropriate audio output provided? — NO → Check the trouble item “Audio reproduction circuit”.
↓ YES
Does recording/reproduction function work properly? — NO → Check the trouble item “Recording/reproduction function”.

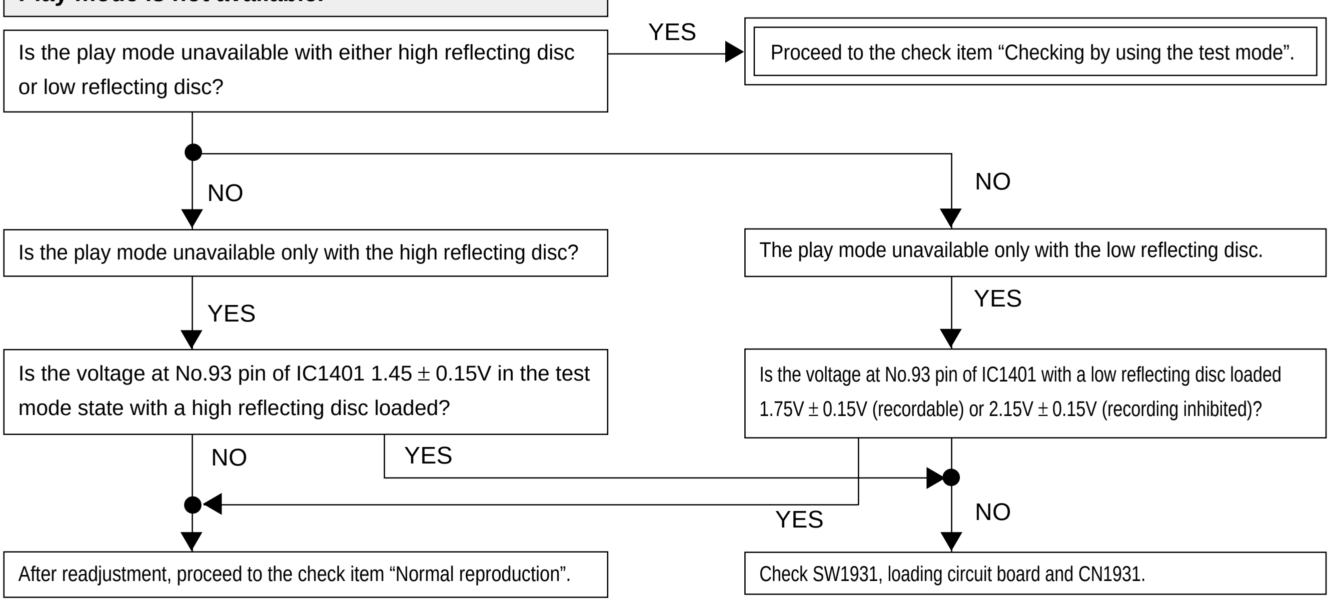
Power fails to turn on.

Does the unit operate properly when its STOP button of is pressed? — YES → Check the display section.
↓ NO
Is +5V ~ +6V voltage applied to No.17 and 18 pins of CN1501? — NO → Check the power supply section and CN1501.
↓ YES
Is a pulse applied to No.6 pin of CN1501 when the reset power is turned on? — NO → Check IC6 and CN1501.
↓ YES
Is the voltage at No.62 pin of IC1401 +3.2V? — YES → Check around Q1804 and IC1401.
↓ NO
Is a 8.4672MHz pulse applied to No.15 pin of IC1401? — NO → Check IC1201.
↓ YES
Is a pulse output from No.34 pin of IC1401? — NO → Check IC1401.
↓ YES
Check CN1501 and IC6.

Disc cannot be loaded properly.



Play mode is not available.



Normal reproduction

Applicable when the E2-PROM value has been confirmed as normal in the test mode

Is initialization done properly for reproduction of a high reflecting disc?
- YES → Does the play time display count up properly?
  - NO → Check IC1201.
- NO → Is the disc turning properly?
  - NO → Does the lead-in switch turn on with the pickup at the innermost track in the test mode? (Is No.63 pin of IC1401 at "L"?)
    - NO → Check SW1936, soldered points in the mechanical switch circuit board and around No.6 pin of CN1932.
  - YES → Check the position of the lead-in switch by selecting the lead-in switch position measurement mode from the adjustment items for the high reflecting disc.

Audio reproduction circuit

Applicable when no sound is produced although the play time display counts up properly during reproduction in the normal mode

Is the audio output waveform obtained at No.24 and 26 pins of IC1701?
- NO → Check No.70 — 72, 74 pins of IC1201 and No.12, 16, 17, 19 pins of IC1701.
- YES → Is the audio output waveform obtained at No.26 and 28 pins of CN1501?
  - NO → Check the connection line IC1701 and CN1501.
  - YES → Is the audio output waveform obtained at No.1 and 7 pins of IC3?
    - NO → Check IC3.
    - YES → Check the muting section of IC8.

Recording/reproduction function

Load a low reflection disc and after confirming the audio output in the normal reproduction mode, execute recording/reproduction.

- **Does the recording function fail from the starting address?**
  - NO → Check that the disc is not in the recording inhibited status.
  - YES ↓
- **Is an RF waveform available at No.1 pin of IC1201 or TP1201 during reproduction after recording?**
  - YES → go to "Is an output waveform available at No. 1 and 7 pins of IC4 and No. 1 and 7 pins of IC5 while recording the LINE input in the normal mode?"
  - NO ↓
- **Does the level of No.3, 26 and 39 pins of IC1401 change between recording and reproduction?**
  - NO → Check around IC1401.
  - YES ↓
- **Is an RF pattern provided at No.50 pin of IC1201?**
  - NO → Check IC1201 for proper soldering.
  - YES ↓
- Check IC1300 — 1302 and CN1300.

- **Is an output waveform available at No. 1 and 7 pins of IC4 and No. 1 and 7 pins of IC5 while recording the LINE input in the normal mode?**
  - NO → Check around IC4 and IC5 and also check the REC LEVEL volume.
  - YES ↓
- **Is an input waveform applied to No.3 and 5 pins of IC1701?**
  - NO → Check around IC1701 and CN1501.
  - YES ↓
- Check around IC1701 and No.70 — 73 pins of IC1201.

Checking by using the test mode

Spindle motor does not run.

Is a correct waveform provided at No.24 and 25 pins of IC1201 during the AUTO adjustment mode step 3 in the test mode?

- NO → Check No.24 and 25 pins of IC1201 as well as solder connections and parts of the peripheral circuit.
- YES ↓

Is a waveform provided at No.9 and 10 pins of IC1601 as well as at No.5 and 6 pins of CN1402?

- NO → Check IC1601, CN1402 and the mechanism switch circuit board solder connections.
- YES ↓

Replace the spindle motor as a complete unit.

Sled motor does not run.

Does a change occur at No.22 and 23 pins of IC1201 when ►► and ◄◄ buttons are pressed?

- NO → Check the waveform at No.22 and 23 pins of IC1201, peripheral parts and solder connections.
- YES ↓

Does a change occur at No.14 and 15 pins of IC1601 and No.3 and 4 pins of CN1402 when the ►► and ◄◄ buttons are pressed?

- NO → Check IC1601 and CN1402 solder connections.
- YES ↓

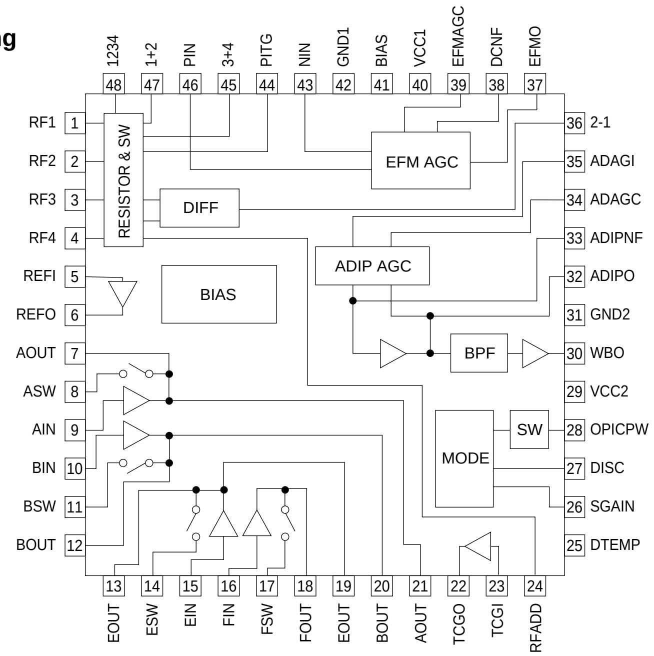
Does a voltage change occur at the + and - terminals of the sled motor when the ►► and ◄◄ buttons are pressed?

- NO → Check the connection section to the sled motor for any poor solder connections or broken wires.
- YES ↓

Replace the sled motor.

■ IC DATA

IC1101 : IR3R58M
RF Signal Processing



No.	Pin Name	Function
1	RF1	RF signal input terminal 1 to input RF signal output from pickup
2	RF2	RF signal input terminal 2 to input RF signal output from pickup
3	RF3	RF signal input terminal 3 to input RF signal output from pickup
4	RF4	RF signal input terminal 4 to input RF signal output from pickup
5	REFI	Amplifier input terminal for reference voltage
6	REFO	Amplifier output terminal for reference voltage
7	AOUT	Amplifier (focus servo system) output terminal 1 for servo signal
8	ASW	Amplifier (focus servo system) output terminal 2 for servo signal
9	AIN	Amplifier (focus servo system) reverse input terminal for servo signal
10	BIN	Amplifier (focus servo system) reverse input terminal for servo signal
11	BSW	Amplifier (focus servo system) output terminal 2 for servo signal
12	BOUT	Amplifier (focus servo system) output terminal 1 for servo signal
13	EOUT	Amplifier (tracking servo system) output terminal 1 for servo signal
14	ESW	Amplifier (tracking servo system) output terminal 2 for servo signal
15	EIN	Amplifier (tracking servo system) reverse input terminal for servo signal
16	FIN	Amplifier (tracking servo system) reverse input terminal for servo signal
17	FSW	Amplifier (tracking servo system) output terminal 2 for servo signal
18	FOUT	Amplifier (tracking servo system) output terminal 1 for servo signal
19	EOUT	Amplifier (tracking servo system) output terminal 1 for servo signal
20	BOUT	Amplifier (tracking servo system) output terminal 1 for servo signal
21	AOUT	Amplifier (tracking servo system) output terminal 1 for servo signal
22	TCGO	Amplifier output terminal for track cross detect signal when in groove section
23	TCGI	Amplifier input terminal for track cross detect signal when in groove section
24	RFADD	Output terminal for added resistance of RF1 ~ 4
25	DTEMP	Chip temperature detect terminal
26	SGAIN	Switch control terminal for servo amplifier
27	DISC	Pit/grove mode select control terminal
28*	OPICPW	Power supply output terminal for OPIC section
29	VCC2	Power supply terminal for digital/power section
30*	WBO	Comparator output terminal to make ADIP signal into binary value
31	GND2	Ground terminal for digital/power section
32	ADPO	Pre-amplifier output terminal for ADIP signal

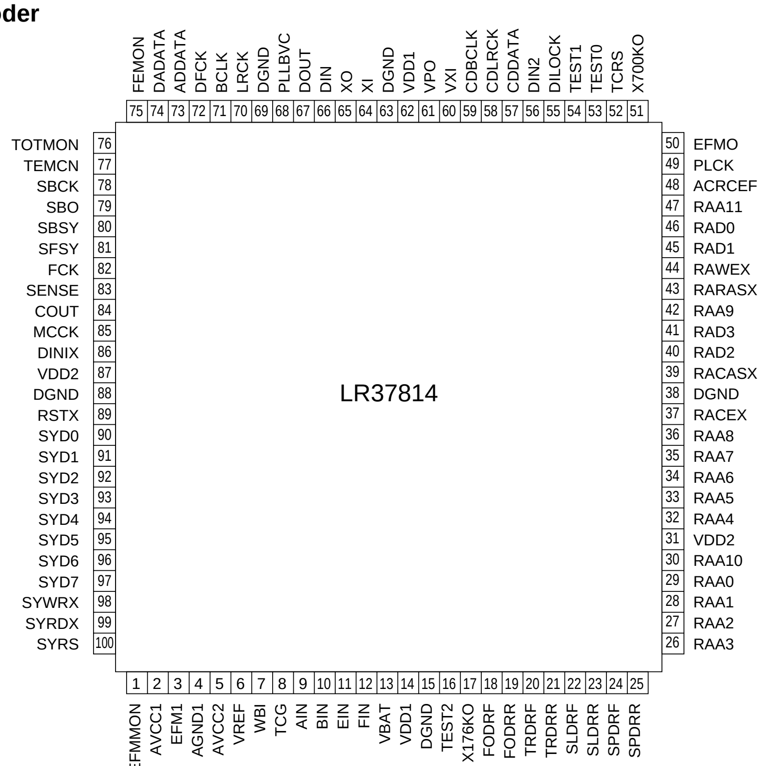
The * marked terminal is a terminal which is not connected externally (open terminal).

IC1101 : IR3R58M
RF Signal Processing

No.	Pin Name	Function
33*	ADIPNF	AGC amplifier output terminal for ADIP signal
34	ADAGC	AGC smooth capacitor connecting terminal for ADIP signal
35	ADAGI	AGC amplifier input terminal for ADIP signal
36	2-1	RF1, RF2 differential signal
37	EFMO	AGC amplifier output terminal for RF signal
38	DCNF	Reference voltage smooth capacitor connecting terminal for RF signal AGC amplifier
39	EFMAGO	AGC smooth capacitor connecting terminal for RF signal
40	VCC1	Power supply terminal for analog section
41	BIAS	Bias input terminal
42	GND1	Ground terminal for analog section
43	NIN	AGC amplifier reverse input terminal for RF signal
44	PITG	Ground terminal when in pit section
45	3+4	Output terminal for added resistance of RF3 and RF4 when in groove section
46	PIN	AGC amplifier reverse input terminal for RF signal
47	1+2	Output terminal for added resistance of RF1 and RF2 when in groove section
48	1234	Output terminal for added resistance of RF1 ~ 4 when in pit section

The * marked terminal is a terminal which is not connected externally (open terminal).

IC1201 : LR37814
ATRAC Encoder/Decoder



No.	Pin Name	I/O	Function
1*	EFMMON	O	EFM monitor output
2	AVCC		Power supply terminal for analog section
3	EFMI	I	Input terminal for EFM signal from RF amplifier
4	AGND1		Ground terminal for analog section
5	AVCC2		Power supply terminal for analog section
6	VREF	I	Reference voltage input for RF amplifier
7	WBI	I	ADIP wobble signal
8	TCG	I	Tracking cross signal
9	AIN	I	Focus error signal A

The * marked terminal is a terminal which is not connected externally (open terminal).

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IC1201 : LR37814
ATRAC Encoder/Decoder

No.	Pin Name	I/O	Function
10	BIN	I	Focus error signal B
11	EIN	I	Tracking error signal E
12	FIN	I	Tracking error signal F
13	VBAT	I	Power supply voltage detect signal for constant voltage servo
14	VDD1		Power supply terminal for digital section
15	DGND		Digital ground terminal
16	TEST2	I	Connected to GND in normal use
17*	X176KO	O	Clock output. f=176.4KHz (4fs)
18	FODRF	O	Focus servo forward output. PWM
19	FODRR	O	Focus servo reverse output. PWM
20	TRDRF	O	Tracking servo forward output. PWM
21	TRDRR	O	Tracking servo reverse output. PWM
22	SLDRF	O	Slide servo forward output. PWM
23	SLDRR	O	Slide servo reverse output. PWM
24	SPDRF	O	Spindle servo forward output or spindle serve output. PWM
25	SPDRR	O	Spindle servo reverse output or switching of spindle rotation forward/reverse
26	RAA3	O	Address output to external D-RAM. ADR3
27	RAA2	O	Address output to external D-RAM. ADR2
28	RAA1	O	Address output to external D-RAM. ADR1
29	RAA0	O	Address output to external D-RAM. ADR0 (LSB)
30*	RAA10	O	Address output to external D-RAM. ADR10 (MSB)
31	VDD2		Power supply terminal for DRAM interface
32	RAA4	O	Address output to external D-RAM. ADR4
33	RAA5	O	Address output to external D-RAM. ADR5
34	RAA6	O	Address output to external D-RAM. ADR6
35	RAA7	O	Address output to external D-RAM. ADR7
36	RAA8	O	Address output to external D-RAM. ADR8
37	RAOEX	O	Data output enable signal output to external D-RAM
38	DGND		Ground terminal for digital section
39	RACASX	O	Column address strobe signal output to external D-RAM
40	RAD2	I/O	Data input/output with external D-RAM. D2
41	RAD3	I/O	Data input/output with external D-RAM. D3 (MSB)
42	RAA9	O	Address output to external D-RAM. ADR9
43	RARASX	O	Low address strobe signal output to external D-RAM
44	RAWEX	O	Data write enable signal output to external D-RAM
45	RAD1	I/O	Data input/output with external D-RAM. D1
46	RAD0	I/O	Data input/output with external D-RAM. D0 (LSB)
47*	RAA11	O	ADR11 (MSB 64Mbit)
48*	ACRCER	O	CRC error flag monitor output of ADIP
49*	PLCK	O	EFM PLL clock output during reproduction
50	EFM0	O	EFM signal output during recording and C1F (C1 error flag) monitor output during reproduction
51*	X700KO	O	Clock output. f=705.6KHz. No clock output when RSTX=0.
52*	TCRS	O	Track cross signal
53,54	TEST0,TEST1	I	Test input terminal, connected to GND when in normal use
55	DILOCK	O	DIN lock detect
56	DIN2	I/O	Digital input signal. Expansion port 0
57	CDDATA	I/O	Data input for high speed dubbing. Microprocessor expansion output port 5 when switching.
58	CDLRCK	I/O	LR clock input for high speed dubbing. Microprocessor expansion output port 6 when switching.
59	CDBCLK	I/O	Bit clock input for high speed dubbing. Microprocessor expansion output port 7 when switching.
60	VXI	I	PLL clock input for variable pitch.
61*	VPO	O	PLL phase error output for variable pitch.
62	VDD1		Power supply terminal for digital section
63	DGND		Ground terminal for digital section
64	XI	I	Oscillation circuit input. 33.8688MHz

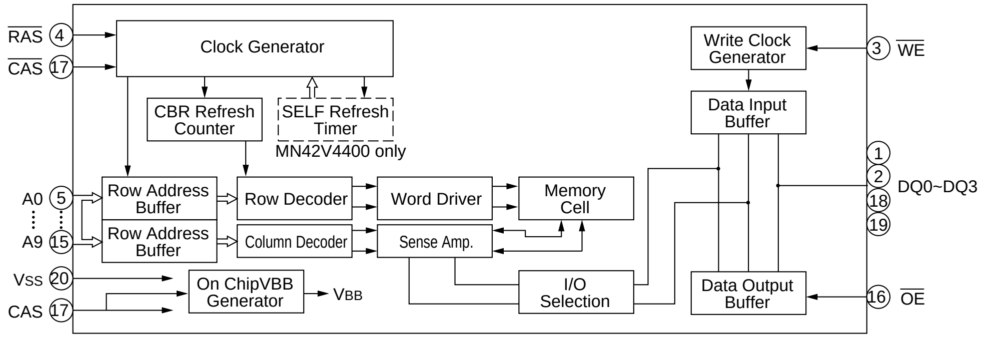
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IC1201 : LR37814
ATRAC Encoder/Decoder

No.	Pin Name	I/O	Function
65	XO	O	Oscillation circuit output. 33.8688MHz
66	DIN	I	Digital input signal
67	DOUT	O	Digital output signal
68	PLLBVG	O	External capacitor terminal for internal PLL
69	DGND		Ground terminal for digital section
70	LRCK	O	Output terminal for switching music data to Lch, Rch
71	BCLK	O	Shift clock for music data
72	DFCK	O	Clock for AD/DA converter digital filter. 256Fs
73	ADDATA	I	Voice data input
74	DADATA	O	Voice data output
75*	FEMON	O	Focus error signal monitor output
76*	TOTMON	O	Total signal monitor output
77*	TEMON	O	Tracking error signal monitor output
78	SBCK	I/O	DIN sub-code reading clock. EIAJ CP-309 format
79	SBO	I/O	DIN sub-code serial data. EIAJ CP-309 format.
80	SBSY	I/O	DIN sub-code block synchronous signal. EIAJ CP-309 format.
81	SFSY	I/O	DIN sub-code frame synchronous signal. EIAJ CP-309 format.
82	FOK	O	Focus OK detect signal. "0": focus OK
83	SENSE	O	Servo state detect signal. "1": Auto move, auto jump, auto focus being drawn in
84	COUT	O	Track cross signal output
85	MCCK	O	Clock output for microprocessor. Clock output also when RSTX=0
86	DINTX	O	Output terminal used to request interrupt into system control interface.
87	VDD2		Power supply terminal for interface section
88	DGND		Ground terminal for digital section
89	RSTX	I	Chip reset input. Reset at "L" (Note)
90	SYD0	I/O	Data bus terminal of system control interface (LSB)
91—96	SYD1 — SYD6	I/O	Data bus terminal of system control interface.
97	SYD7	I/O	Data bus terminal of system control interface. (MSB)
98	SYWRX	I	Input terminal for register write pulse of system control interface
99	SYRDX	I	Input terminal for register read pulse of system control interface
100	SYRS	I	Input terminal for register selection of system control interface

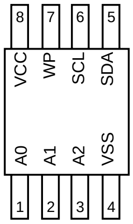
The * marked terminal is a terminal which is not connected externally (open terminal).
(Note) Set RSTX to "L" when or after turning on the power supply.

IC1202 : IX2474AF
4M Bit D-RAM



Pin No.	Name	Function
1, 2	DQ0, DQ1	Data input/data output
3	WE	Write enable
4	RAS	Low address strobe
5	A9	Address input
6 — 9	A0-A3	Address input
10	VDD	Power supply (3.3V)
11 — 15	A4-A8	Address input
16	OE	Output enable
17	CAS	Column address strobe
18, 19	DQ2, DQ3	Data input/data output
20	Vss	Power supply (0V)

IC1402 : 58X2402T
EEPROM



Pin No.	Name	Function
1 — 3	A0 — A2	Device address
4	VSS	Ground
5	SDA	Serial data input/output
6	SCL	Serial clock input
7	WP	Write protect
8	VCC	Power supply

IC1401 : iX0324AW
MD System Microprocessor

No.	Pin Name	I/O	Function
1	4M/16M	O	4M/16M DRAM select input
2	64M	O	64M DRAM select input
3	LDVAR	O	LDVAR (Laser power adjustment output)
4*	ADJS	O	ADJS (for automatic adjustment step check)
5	CIN	I	CIN (Track count signal input)
6*	NC		Unused
7	UNLOCK	I	ERR input (to unlock monitor PLL)
8	BYTE	I	GND
9	CNVss	I	GND
10*	STID OUT	O	ST-ID output
11*	SEACH OUT	O	MD search output
12	RESET	I	RESET input
13*	NC		Clock output
14	Vss		GND
15	MCCK	I	EXTAL (8.4672MHz)
16	Vcc		+3.15V
17	P85	I	Input/output port P85
18	DINT	I	DINT (interrupt input from MD•LSI)
19	SFSY	I	Interrupt input
20	ST-ID	I	ST-ID input (MD-ON)
21	SERCH	I	CD search input (Synchro REC interrupt input)
22	MDRSW	O	MD RSW output
23*	CDB SEL	O	CD BLK SEL output
24	DSENSE	I	DSENSE (Servo sense input from MD-LSI)
25	P-DOWN	I	P-DOWN (power failure detect)
26	HD ON	O	HDON (Magnetic head current ON/OFF output)
27	EEPRO	O	EEPROM protect cancel output
28	HFON	O	HFON
29	EEPK	O	EEPROM serial clock output
30	EEPD	I/O	EEPROM data input/output
31	MD DATA	O	MD data output
32	K DATA	I	System computer data input
33	DSCK	I	System computer communication clock input
34	DSTB	O	DSTB (system computer communication enabled and during communication)
35*	NC	O	Unused
36	SBO	I	Sub-code serial data input
37	SBCK	O	Sub-code communication serial clock output
38	DISC	O	DISC
39	R/P	O	R/P output (REC/PLAY select)
40	FOK	I	FOK (focus servo state monitor input)
41	FLASH L	I	Flash write select
42	SGAIN	O	SGAIN
43	SYRS	O	MD LSI register select signal output
44	SYRD	O	SYRD (MD-LSI read signal output)
45	SYWR	O	SYWR (MD-LSI write signal output)
46	FLASH H	I	Flash write select
47	SYS D7	I/O	SYS D7 (data bus 7)
48	SYS D6	I/O	SYS D6 (data bus 6)
49	SYS D5	I/O	SYS D5 (data bus 5)
50	SYS D4	I/O	SYS D4 (data bus 4)
51	SYS D3	I/O	SYS D3 (data bus 3)
52	SYS D2	I/O	SYS D2 (data bus 2)
53	SYS D1	I/O	SYS D1 (data bus 1)
54	SYS D0	I/O	SYS D0 (Data bus 0)

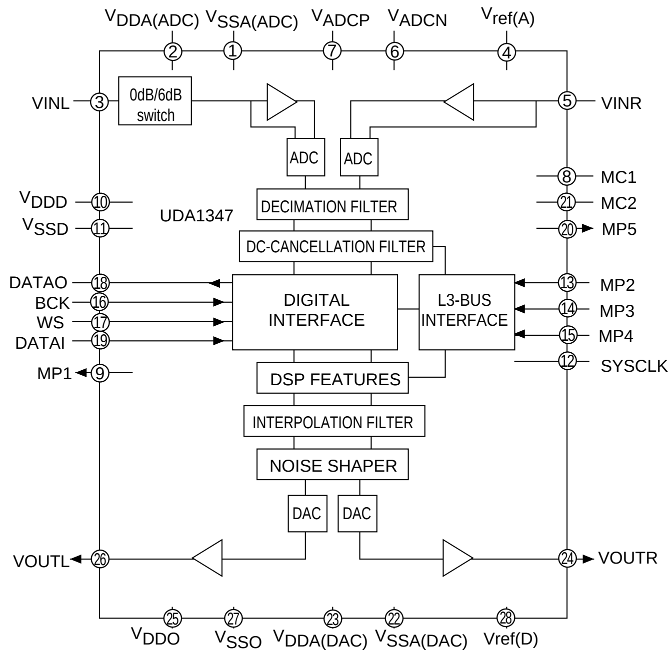
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IC1401 : iX0324AW
MD System Microprocessor

No.	Pin Name	I/O	Function
55*	P37	O	Input/output port P37
56*	P36	O	Input/output port P36
57*	P35	O	Input/output port P35
58*	P34	O	Input/output port P34
59*	P33	O	Input/output port P33
60*	P32	O	Input/output port P32
61	P31	O	Input/output port P31
62	Vcc	I	+3.15V
63	INNSW	I	Pick innermost track detect input
64	GND		GND
65	L3 DATA	O	L3 DATA (soft serial communication, with 2 modes, LSB first)
66	L3 MODE	O	L3 MODE (soft serial communication, with 2 modes, LSB first)
67	L3 CLK	O	L3 CLK (soft serial communication, with 2 modes, LSB first)
68*	P24	O	Input/output port P24
69*	P23	O	Input/output port P23
70	PCNT0	O	PCNT0 output
71*	LAST	O	LAST
72	LD ON	O	LDON output (H: ON)
73	A/B	O	ANLPTR output
74	SBSY	O	ADPON output (for CK)
75*	DAP ON	O	DAPON output (for CK)
76*	DFS0	O	DFS0 output
77*	DFS1	O	DFS1 output
78	P12	O	Input/output port P12
79	P11	O	Input/output port P11
80	XRST	O	XRST (system reset output)
81*	AD MUTE	O	ADMUTE output (for CK)
82	LD+	O	Loading motor + side control output
83	LD-	O	Loading motor - side control output
84*	MUTE	O	MUTE output
85*	RAST	O	RAST
86*	TEST2	I	TEST 2 (special mode select 2)
87*	TEST1	I	TEST 1 (special mode select 1)
88*	TEST0	I	TEST 0 (special mode select 0)
89	AVCK3	I	AVCK3 (motor driver power supply monitor input)
90	AVCK2	I	AVCK2 (AD/DA block 3.1V monitor input)
91	AVCK1	I	AVCK1 (head circuit power supply monitor input)
92	DTEMP	I	DTEMP (temperature detect input)
93	MINF	I	MINF (by disc type / REC input)
94*	TEST K1	I	TEST K1 (test key input 1)
95*	TEST K2	I	TEST K2 (test key input 2)
96	GND		GND
97*	NC		Unused
98	VREF		+3.15V
99	AVcc		+3.15V
100	PR	I	Playback/recording reset input

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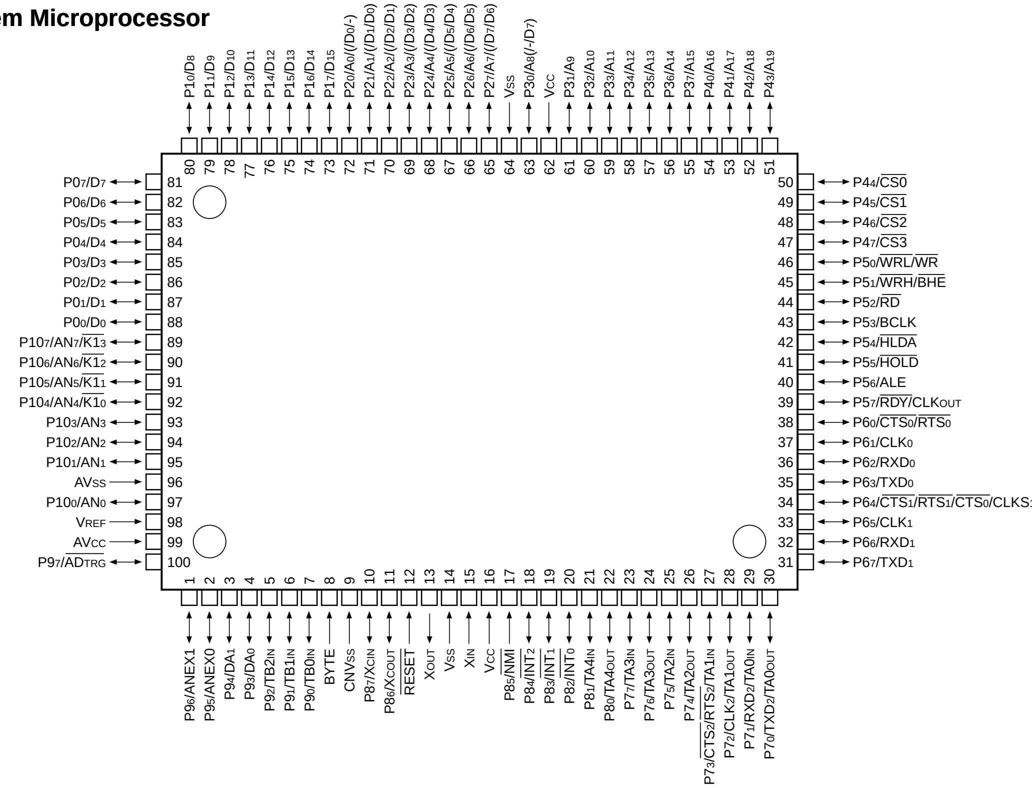
IC1701 : UDA1347T
AD Converter/DA Convereter



Pin No.	Name	Function
1	VSSA(ADC)	ADC analog ground
2	VDDA(ADC)	ADC analog power supply
3	VINL	ADC input (left)
4	Vref(A)	ADC reference voltage
5	VINR	ADC input (right)
6	VADCN	ADC reference voltage N
7	VADCP	ADC reference voltage P
8*	MC1	Mode control 1 (pull-down)
9*	MP1	Multi-purpose pin 1
10	VDDD	Digital power supply
11	VSSD	Digital ground
12	SYSCLK	System clock 256, 384, 512fs
13	MP2	Multi-purpose pin 2
14	MP3	Multi-purpose pin 3
15	MP4	Multi-purpose pin 4
16	BCK	Bit clock input
17	WS	Word select input
18	DATAO	Data output
19	DATAI	Data input
20*	MP5	Multi-purpose pin 5 (pull-down)
21*	MC2	Mode control 2 (pull-down)
22	VSSA(DAC)	DAC analog ground
23	VDDA(ADC)	DAC analog power supply
24	VOUTR	DAC output (right)
25	VDDO	Operation amplifier power supply
26	VOUTL	DAC output (left)
27	VSSO	Operation amplifier ground
28	Vref(D)	DAC reference voltage

The * marked terminal is a terminal which is not connected externally (open terminal).

IC6 : M30622M8-xxxFP
Main System Microprocessor



No.	Port	I/O	Name	Function
1	P96/ANEX1	I/O		Unused (Pull-down at 10 kΩ)
2	P95/ANEX0	I/O		Unused (Pull-down at 10 kΩ)
3	P94/DA1	I/O		Unused (Pull-down at 10 kΩ)
4	P93/DA0	I/O		Unused (Open)
5	P92/TB2in	O	DIG_SW	Digital input switching
6	P91/TB1in	O	/LMUTE	LINE MUTE
7	P90/TB0in			Unused (GND)
8	BYTE	I	GND	
9	CNVss	I	GND	(Pull-down at 5.1 kΩ)
10	P87/Xcin	I/O		Unused (Pull-down at 10 kΩ)
11	P86/Xcout	I/O		Unused (Pull-down at 10 kΩ)
12	/RESET	I	/RESET	Reset input
13	Xout	O	XOUT	Ceramic clock 10MHz
14	Vss	I	GND	GND level input
15	Xin	I	XIN	Ceramic clock 10MHz
16	Vcc	I	VCC	Microprocessor power supply input
17	P85//NMI	I		PU to Vcc
18	P84//INT2	I	MD-DSTB	MD strobe input
19	P83//INT1	I	P-IN	Power failure detect (Power down)
20	P82//INT0	I	REM	Remote controller input
21	P81/TA4in	I/O		Unused (Pull-down at 10 kΩ)
22	P80/TA4out	I/O		Unused (Pull-down at 10 kΩ)
23	P77/TA3in	I/O		Unused (Pull-down at 10 kΩ)
24	P76/TA3out	I/O		Unused (Pull-down at 10 kΩ)
25	P75/TA2in	I/O		Unused (Pull-down at 10 kΩ)
26	P74/TA2out	I/O		Unused (Pull-down at 10 kΩ)
27	P73/TA1in	I/O		Unused (Pull-down at 10 kΩ)
28	P72/TA1out	O	EE-CLK	Clock to EEPROM
29	P71/TA0in	I	EE-DTin	Data input for EEPROM
30	P70/TA0out	O	EE-DTout	Data to EEPROM
31	P67/TxD1	O	FLDAT	Data to FL driver
32	P66/RxD1	O	FLCE	CE FL driver
33	P65/CLK1	O	FLCLK	Clock FL data
34	P64//CTS	O	/FLRES	Reset FL driver
35	P63/TxD0	O	MD-KDATA	MD key data
36	P62/RxD0	I	MD-MDATA	MD data input
37	P61/CLK0	O	MD-DSCK	MD clock output
38	P60//CTS0,/RTS0	O	MD-ST	MD start (MD-ON)
39	P57//RDY,CLKout	O	/MD-RESET	MD reset output

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IC6 : M30622M8-xxxFP
Main System Microprocessor

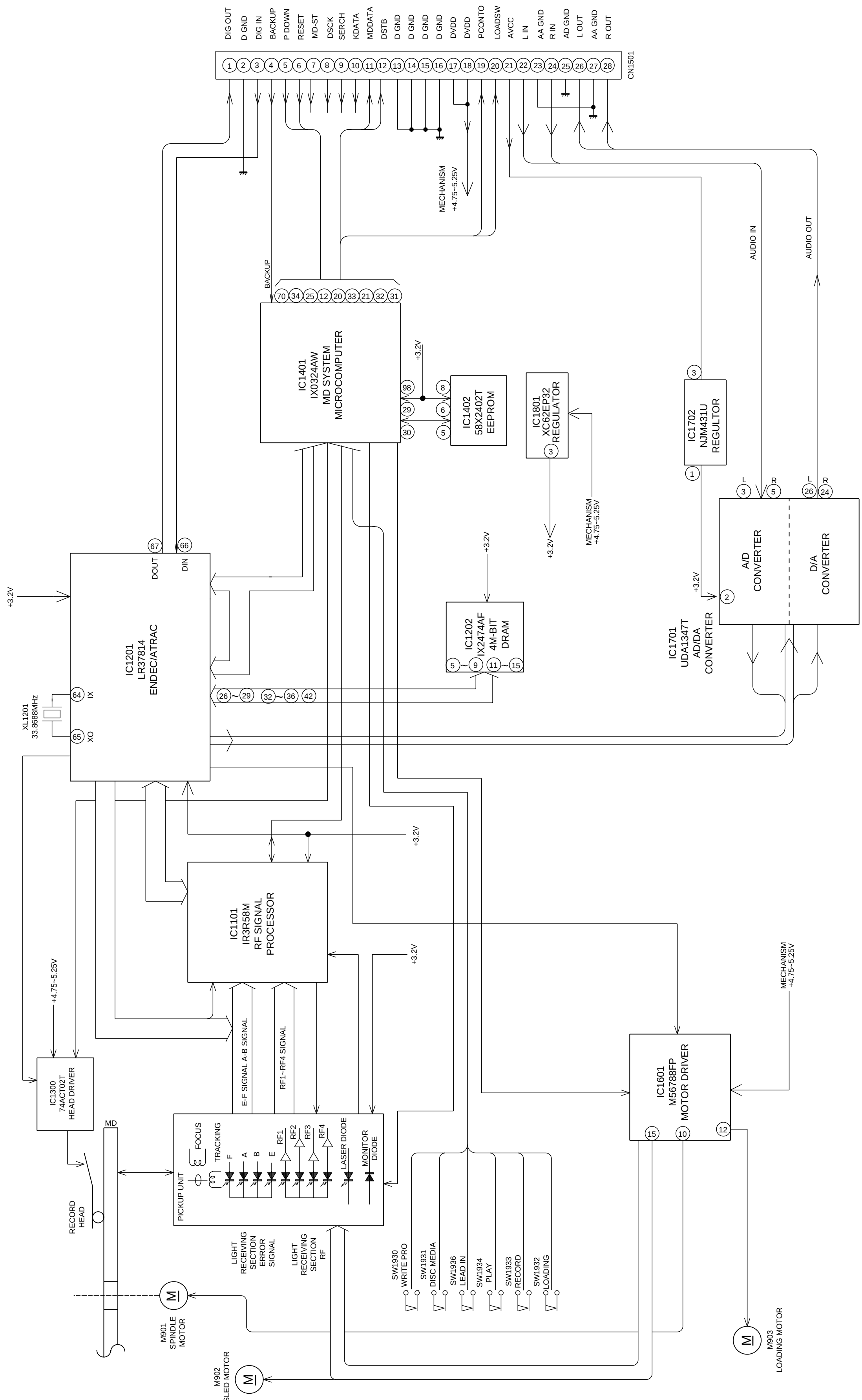
No.	Port	I/O	Name	Function
40	P56/ALE	I/O		Unused (Pull-down at 10 kΩ)
41	P55//HOLD	I	FLASH_GND	
42	P54//HLDA	O	POWERDOWN	Used at MD unit power failure
43	P53/BCLK	I/O		Unused (Pull-down at 10 kΩ)
44	P52//RD	I/O		Unused (Pull-down at 10 kΩ)
45	P51//WRH,/BHE	I/O		Unused (Pull-down at 10 kΩ)
46	P50//WRL,/WR	I	FLASH_VCC	PU at 10kΩ
47	P47//CS3	I/O		Unused (pull up)
48	P46//CS2	I/O		Unused (pull up)
49	P45//CS1	I	INT	Destination input
50	P44//CS0	I	MD-LOAD	L-H: DISC IN
51	P43/A19	I/O		Unused (Pull-down at 10 kΩ)
52	P42/A18	I/O		Unused (Pull-down at 10 kΩ)
53	P41/A17	I/O		Unused (Pull-down at 10 kΩ)
54	P40/A16	I/O		Unused (Pull-down at 10 kΩ)
55	P37/A15	I/O		Unused (Pull-down at 10 kΩ)
56	P36/A14	I/O		Unused (Pull-down at 10 kΩ)
57	P35/A13	I/O		Unused (Pull-down at 10 kΩ)
58	P34/A12	I/O		Unused (Pull-down at 10 kΩ)
59	P33/A11	I/O		Unused (Pull-down at 10 kΩ)
60	P32/A10	I/O		Unused ((Pull-down at 10 kΩ)
61	P31/A9	I/O		Unused (Pull-down at 10 kΩ)
62	Vcc	I	VCC	Microprocessor power supply input
63	P30/A8	I/O		Unused (Pull-down at 10 kΩ)
64	Vss	I	GND	GND level input
65	P27/A7	I/O		Unused (Pull-down at 10 kΩ)
66	P26/A6	I/O		Unused (Pull-down at 10 kΩ)
67	P25/A5	I/O		Unused (Pull-down at 10 kΩ)
68	P24/A4	I/O		Unused (Pull-down at 10 kΩ)
69	P23/A3	I/O		Unused (Pull-down at 10 kΩ)
70	P22/A2	I/O		Unused (Pull-down at 10 kΩ)
71	P21/A1	I/O		Unused (Pull-down at 10 kΩ)
72	P20/A0	I/O		Unused (Pull-down at 10 kΩ)
73	P17/D15	I/O		Unused (Pull-down at 10 kΩ)
74	P16/D14	I/O		Unused (Pull-down at 10 kΩ)
75	P15/D13	I/O		Unused (Pull-down at 10 kΩ)
76	P14/D12	I/O		Unused (Pull-down at 10 kΩ)
77	P13/D11	I/O		Unused (Pull-down at 10 kΩ)
78	P12/D10	I/O		Unused (Pull-down at 10 kΩ)
79	P11/D9	I/O		Unused (Pull-down at 10 kΩ)
80	P10/D8	I/O		Unused ((Pull-down at 10 kΩ)
81	P07/D7	I/O		Unused (Pull-down at 10 kΩ)
82	P06/D6	I/O		Unused (Pull-down at 10 kΩ)
83	P05/D5	I/O		Unused (Pull-down at 10 kΩ)
84	P04/D4	I	TREC	Timer SW input
85	P03/D3	I	TPLY	Timer SW input
86	P02/D2	I/O		Unused (Pull-down at 10 kΩ)
87	P01/D1	I	JOG2	JOG input 2
88	P00/D0	I	JOG1	JOG input 1
89	P107/AN7	I/O		Unused (Pull-down at 10 kΩ)
90	P106/AN6	I/O		Unused (Pull-down at 10 kΩ)
91	P105/AN5	I/O		Unused ((Pull-down at 10 kΩ)
92	P104/AN4	I/O		Unused (Pull-down at 10 kΩ)
93	P103/AN3	I/O		Unused (Pull-down at 10 kΩ)
94	P102/AN2	I	KEY3	KEY input 3
95	P101/AN1	I	KEY2	KEY input 2
96	AVss	I	GND	GND level input for AD
97	P100/AN0	I	KEY1	KEY input 1
98	Vref	I	VREF	Reference voltage input for AD
99	AVcc	I	VCC	Power supply terminal for AD
100	P97//ADTRG	I/O		Unused (Pull-down at 10 kΩ)

● **KEY INPUT (A-D)**

Voltage	0—0.5V	0.5—1.0V	1.0—1.5V	1.5—2.0V	2.0—2.5V	2.5—3.0V	3.0—3.5V
KEY 1	REW	FF	SELECTER	REC	STOP	PLAY	NO KEY
KEY 2	NO KEY	TITLE	CHARA	DELETE	EDIT	ENTER	EJECT
KEY 3	NO KEY	RANDOM	REPEAT S/F	REPEAT A-B	DISPLAY	SCROLL	NO KEY

MDX-596

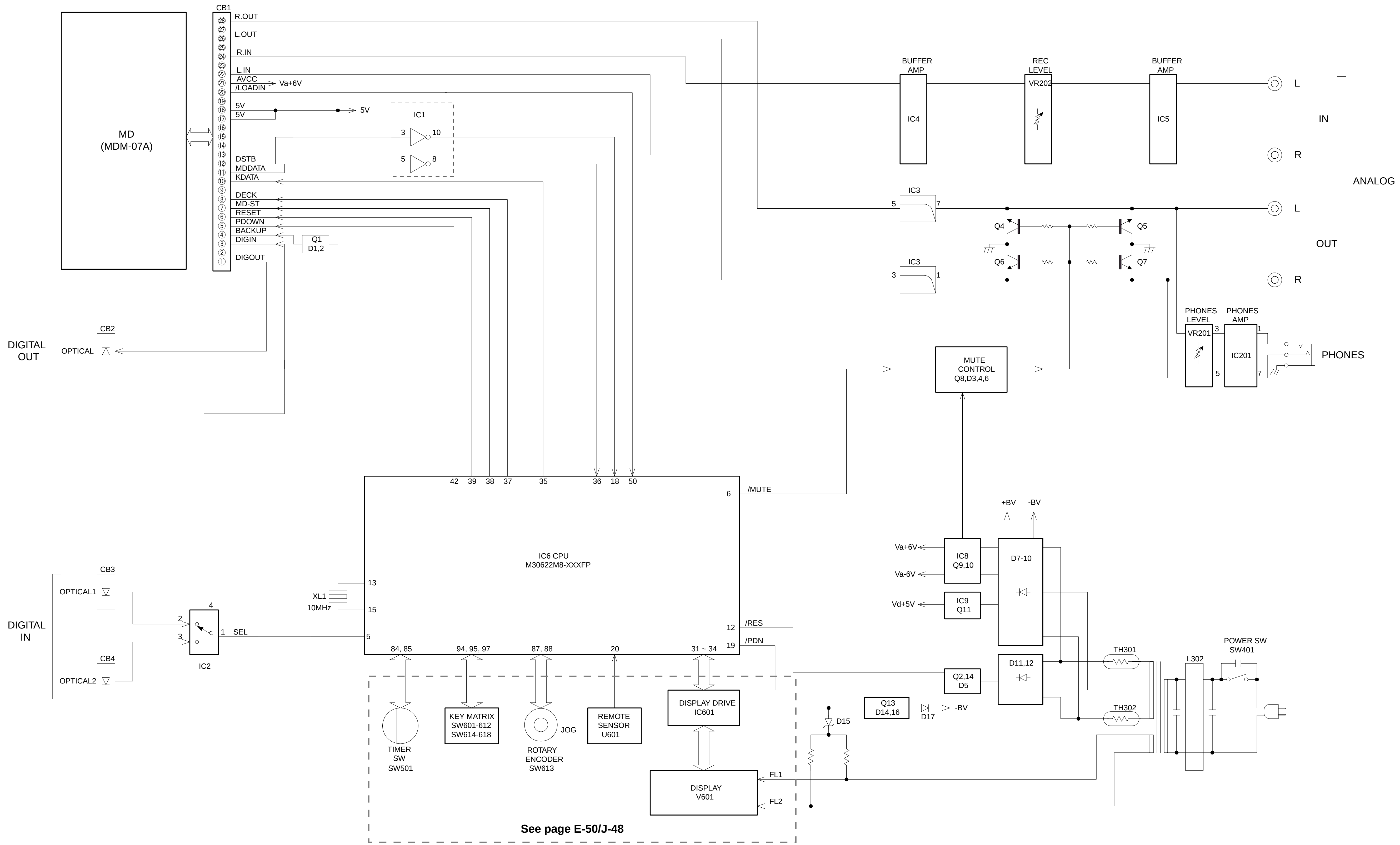
■ BLOCK DIAGRAM (MD)



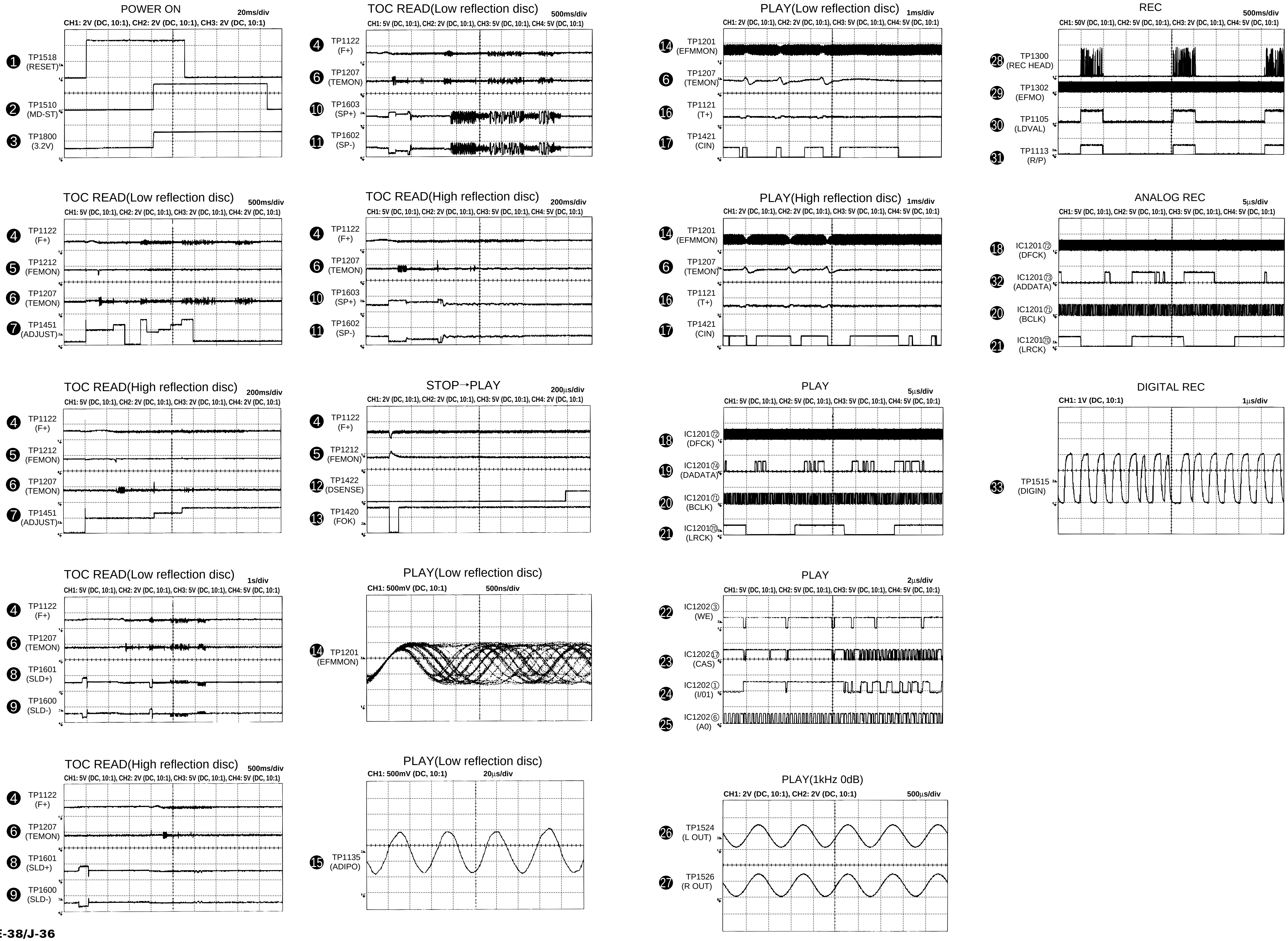
● See page E-48/J-46
Schematic diagram MD unit

■ BLOCK DIAGRAM

See page E-49/J-47

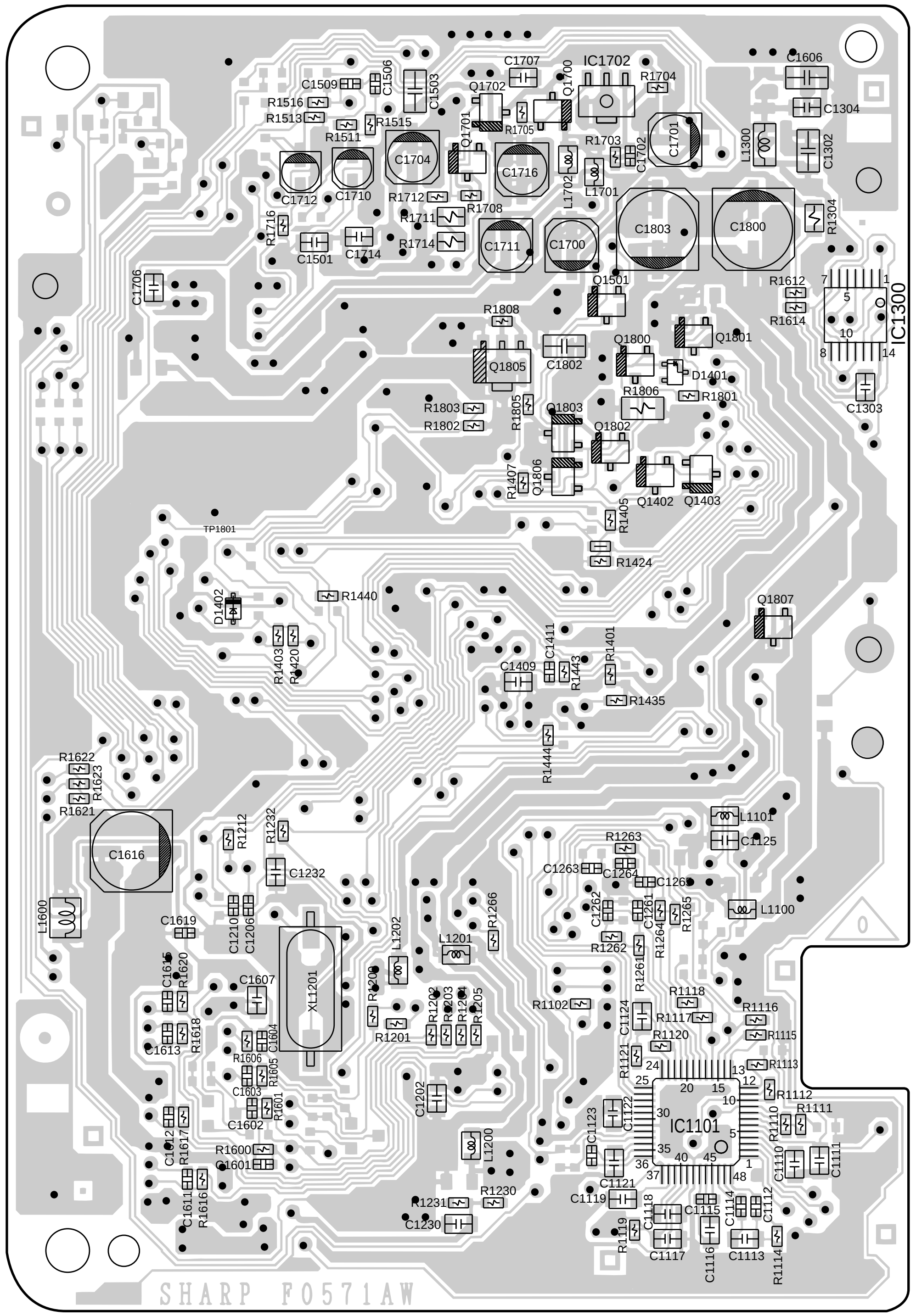


■ TEST POINT WAVEFORM

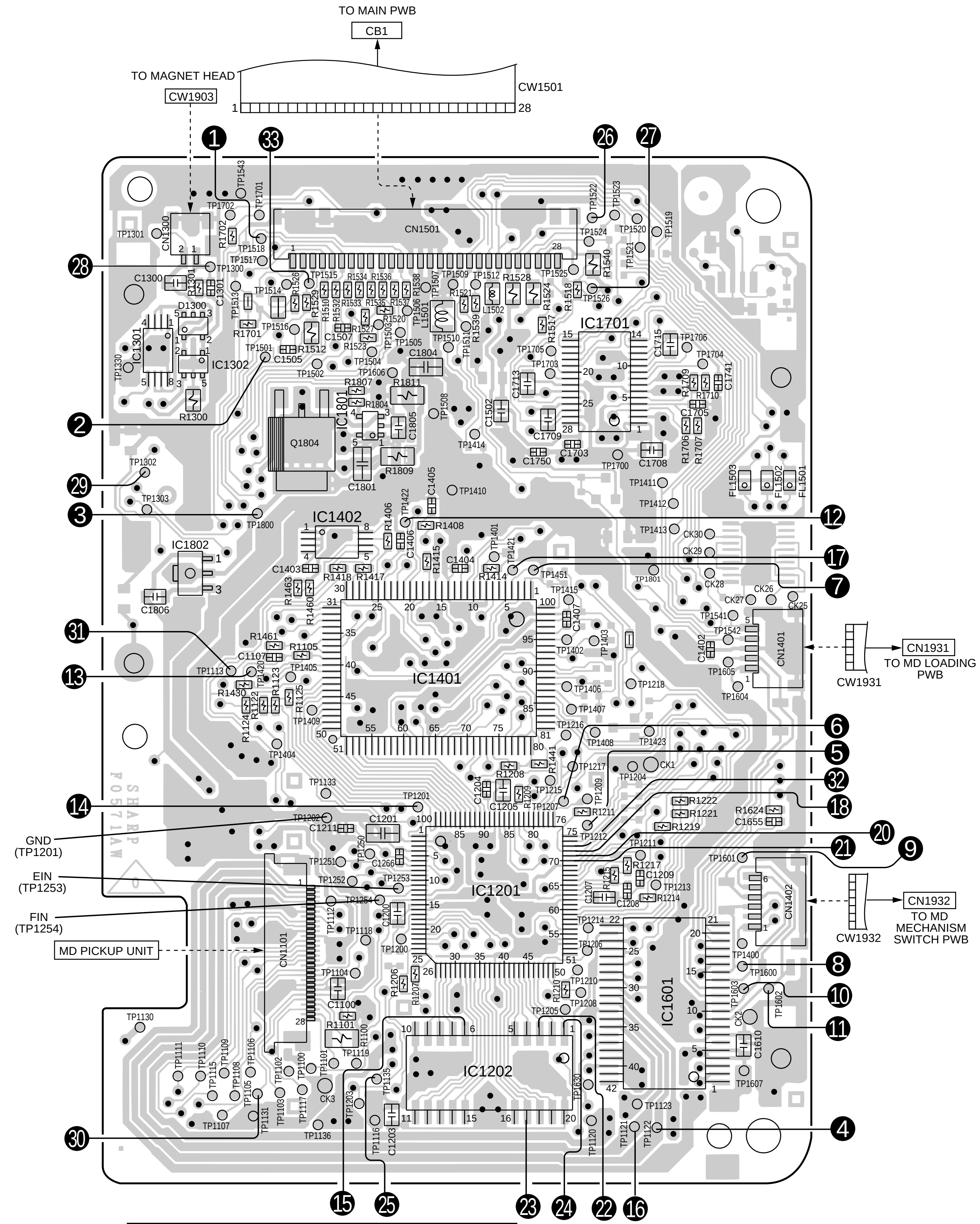


■ PRINTED CIRCUIT BOARD

❶ to ㉝: TEST POINT WAVEFORMS (See page E38/J36)



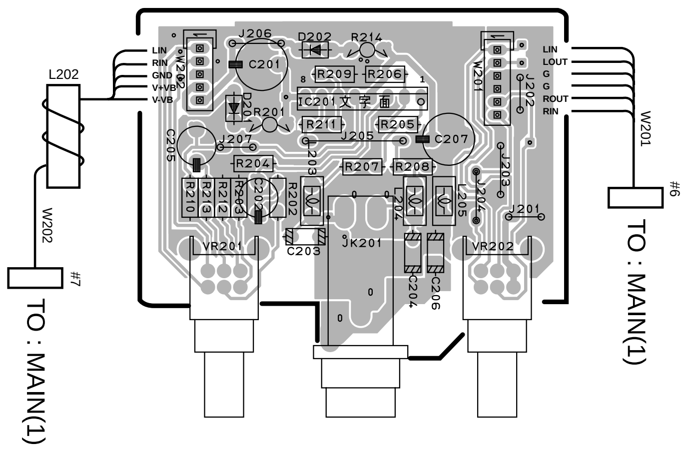
MD MAIN PWB-C (TOP VIEW)



MD MAIN PWB-C (BOTTOM VIEW)

■ PRINTED CIRCUIT BOARD (Foil side)

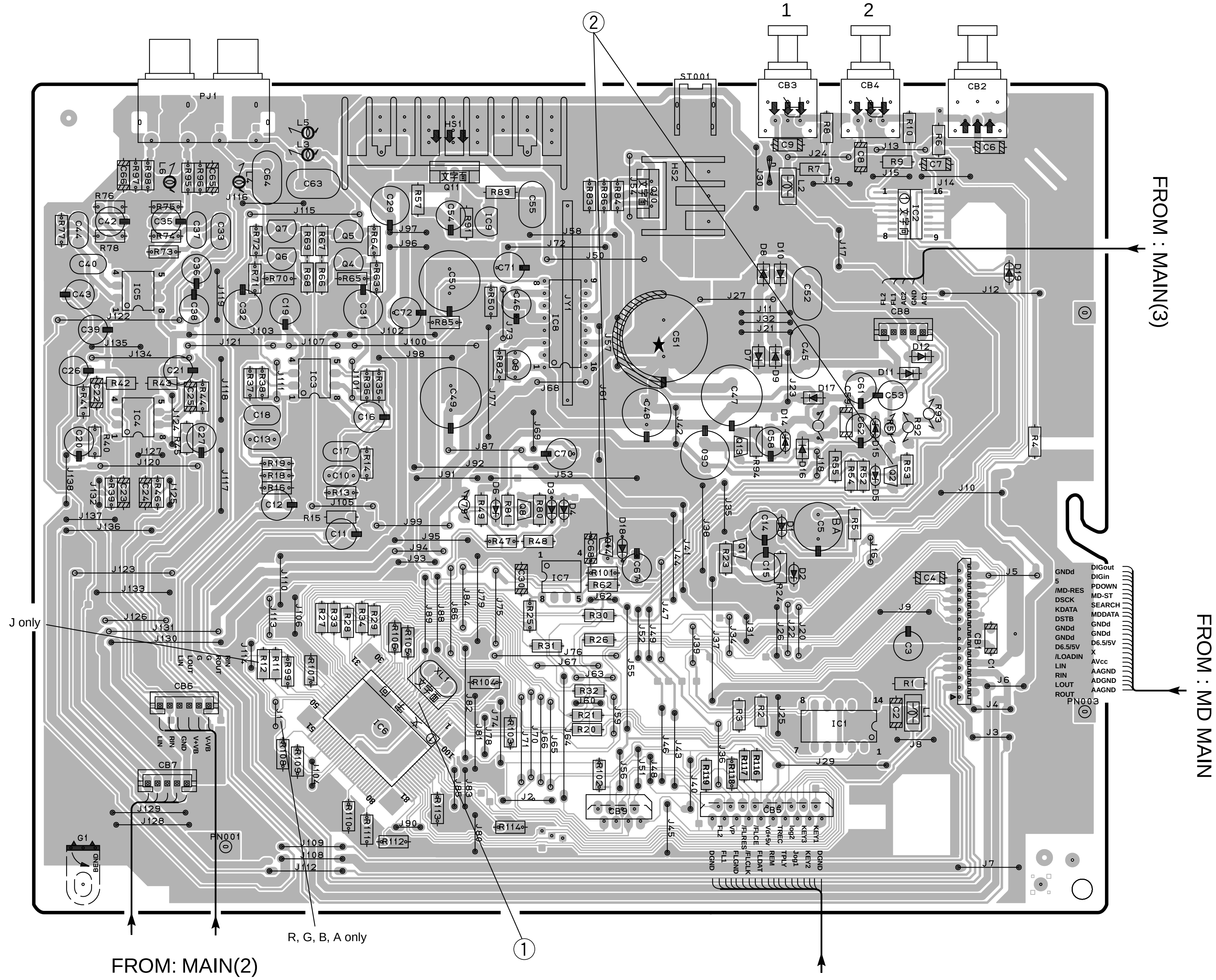
MAIN (2) P.C.B.



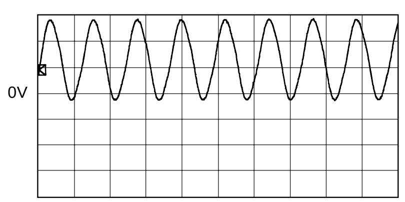
ANALOG
IN OUT

MAIN (1) P.C.B.

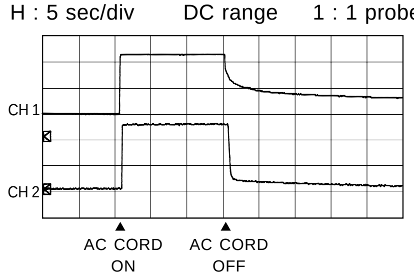
DIGITAL(OPTICAL)
IN 1 2 OUT



Point ① (Pin 13 of IC6)
V : 2V/div H : 20 µsec/div
DC range 1 : 1 probe

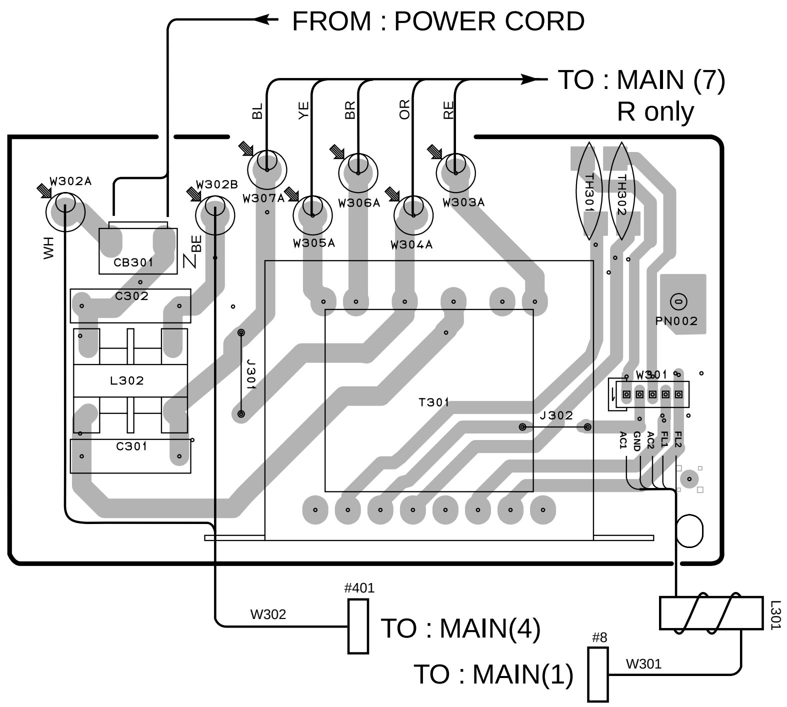


Point ②
CH1 : Emitter of Q2 — V : 2V/div CH1
CH2 : Collector of Q14 — V : 2V/div CH2
H : 5 sec/div DC range 1 : 1 probe

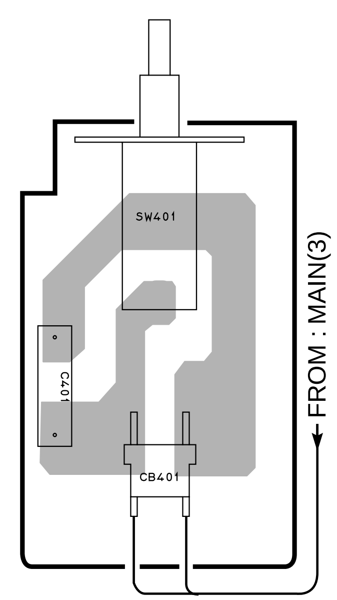


■ PRINTED CIRCUIT BOARD (Foil side)

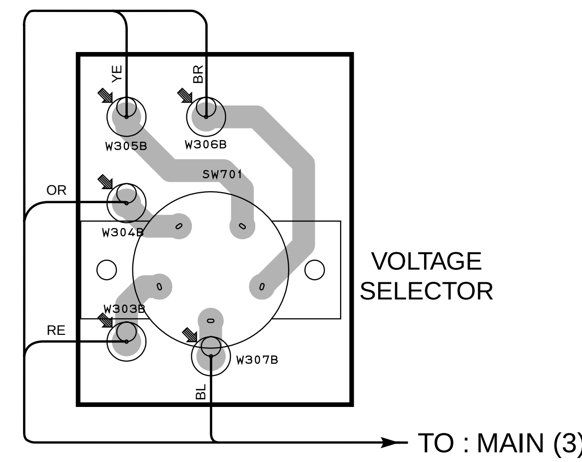
MAIN (3) P.C.B.



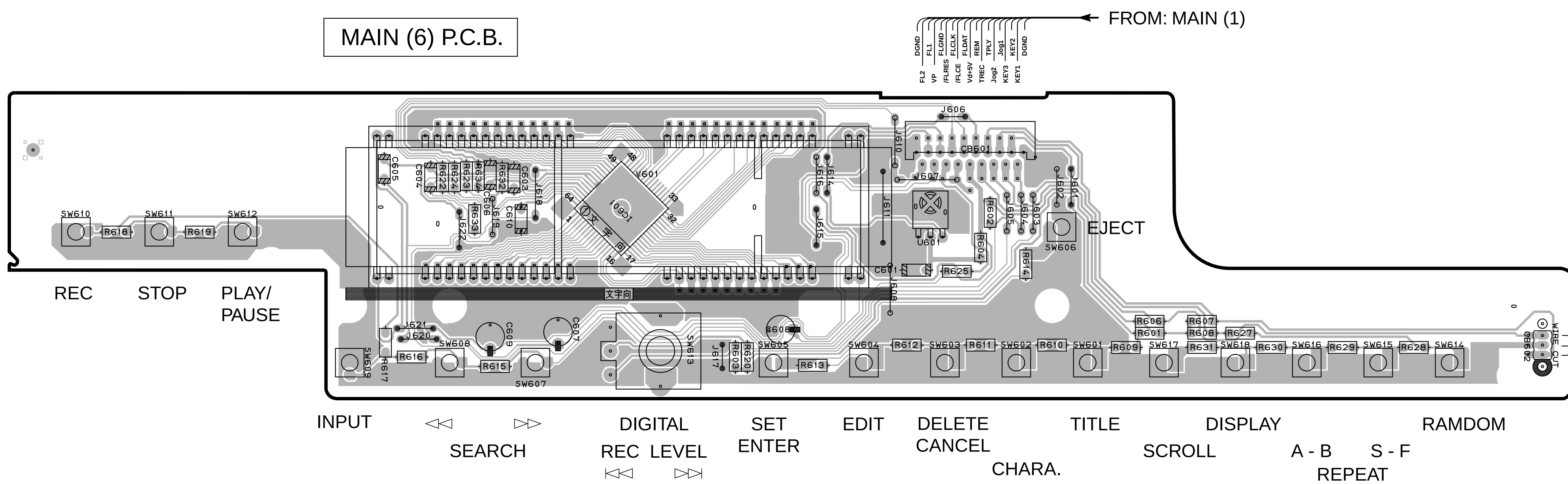
MAIN (4) P.C.B.



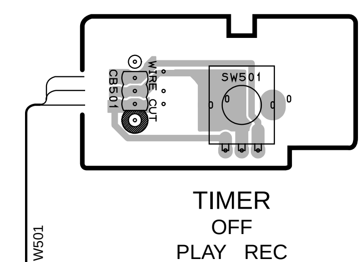
MAIN (7) P.C.B.



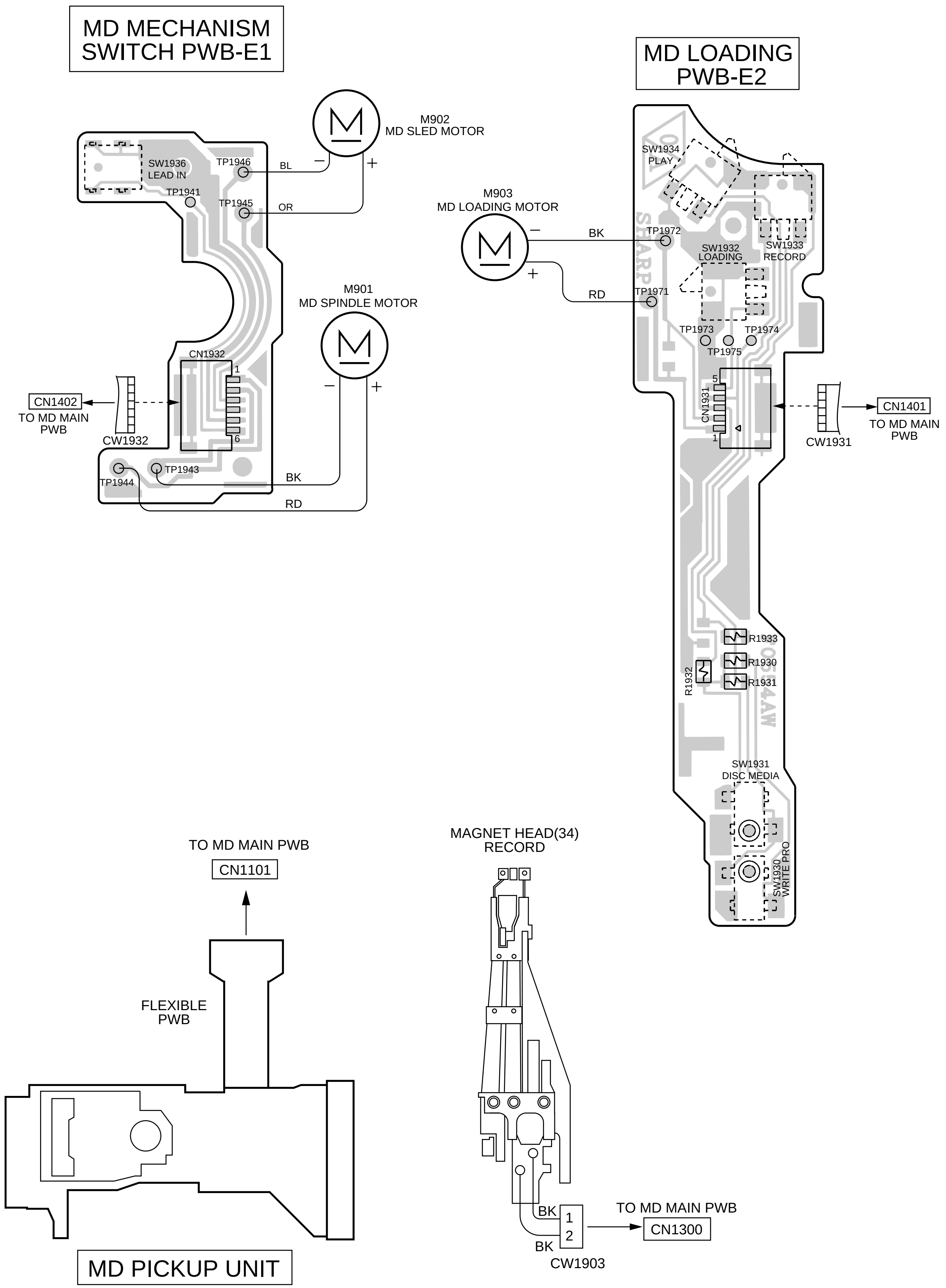
MAIN (6) P.C.B.



MAIN (5) P.C.B.



■ PRINTED CIRCUIT BOARD



■ MD VOLTAGES

IC1101

PIN NO.	VOLTAGE
1	0.7V
2	0.7V
3	0.7V
4	0.7V
5	1.3V
6	1.3V
7	1.3V
8	1.3V
9	1.3V
10	1.3V
11	1.3V
12	1.3V
13	1.3V
14	1.3V
15	1.3V
16	1.3V
17	1.3V
18	1.3V
19	1.3V
20	1.3V
21	1.3V
22	1.3V
23	1.3V
24	0.7V
25	1.5V
26	0V
27	3.2V (0V)
28	2.6V
29	2.6V
30	1.3V
31	0V
32	1.3V
33	1.3V
34	0V
35	1.3V
36	1.3V
37	1.3V
38	1.3V
39	0V
40	2.6V
41	1.6V
42	0V
43	1.3V
44	1.1V
45	0.7V
46	1.3V
47	0.7V
48	0V

IC1201

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	1.3V	51	1.6V
2	2.6V	52	0V
3	1.3V	53	0V
4	0V	54	0V
5	2.6V	55	3.2V
6	1.3V	56	0V
7	1.3V	57	3.2V
8	1.3V	58	3.2V
9	1.3V	59	3.2V
10	1.3V	60	3.2V
11	1.3V	61	0V
12	1.3V	62	2.5V
13	2.6V	63	0V
14	2.6V	64	1.0V
15	0V	65	1.0V
16	0V	66	1.6V
17	1.6V	67	1.6V
18	1.6V	68	0V
19	1.6V	69	0V
20	1.6V	70	1.6V
21	1.6V	71	1.6V
22	1.6V	72	1.6V
23	1.6V	73	0V
24	1.6V	74	0V
25	1.6V	75	1.6V
26	0.7V	76	1.6V
27	0.7V	77	1.6V
28	0.7V	78	0V
29	1.7V	79	3.2V
30	1.3V	80	3.2V
31	3.2V	81	3.2V
32	0.7V	82	3.2V
33	1.1V	83	0V
34	1.1V	84	0V
35	1.1V	85	1.6V
36	1.1V	86	3.2V
37	2.3V	87	3.2V
38	0V	88	0V
39	2.5V	89	3.2V
40	1.8V	90	0.2V
41	1.9V	91	0V
42	1.3V	92	0V
43	2.3V	93	0V
44	3.1V	94	0V
45	1.8V	95	0.1V
46	1.3V	96	0V
47	1.3V	97	0V
48	3.0V	98	3.2V
49	2.6V	99	3.2V
50	1.4V	100	0V

IC1401

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	0V	51	0V
2	0V	52	0V
3	0V	53	0V
4	0.4V	54	0.2V
5	0V	55	0V
6	0V	56	0V
7	3.2V	57	0V
8	0V	58	0V
9	0V	59	0V
10	0V	60	0V
11	0V	61	0V
12	3.2V	62	3.2V
13	1.5V	63	3.2V
14	0V	64	0V
15	1.6V	65	3.2V
16	3.2V	66	3.2V
17	3.2V	67	3.2V
18	3.2V	68	0V
19	3.2V	69	0V
20	0V	70	3.1V
21	0V	71	0V
22	3.2V	72	0V
23	0V	73	0V
24	0V	74	3.2V
25	2.9V	75	3.2V
26	3.2V	76	0V
27	3.2V	77	0V
28	0V	78	0V
29	3.2V	79	0V
30	3.2V	80	3.2V
31	1.5V	81	0V
32	0V	82	0V
33	2.6V	83	0V
34	0.8V	84	3.2V
35	3.2V	85	0V
36	3.2V	86	3.2V
37	0V	87	3.2V
38	0V	88	3.2V
39	0V (3.2V)	89	2.0V
40	3.2V	90	1.8V
41	0V	91	2.2V
42	0V	92	1.5V
43	0V	93	0.7V
44	3.2V	94	0V
45	3.2V	95	0V
46	3.2V	96	0V
47	0V	97	0V
48	0V	98	3.2V
49	0.1V	99	3.2V
50	0V	100	0V

IC1202

PIN NO.	VOLTAGE
1	1.3V
2	1.8V
3	3.1V
4	2.3V
5	1.3V
6	1.7V
7	0.7V
8	0.7V
9	0.7V
10	3.2V
11	0.7V
12	1.1V
13	1.1V
14	1.1V
15	1.1V
16	2.3V
17	2.5V
18	1.8V
19	1.9V
20	0V

IC1402

PIN NO.	VOLTAGE
1	0V
2	0V
3	0V
4	0V
5	3.2V
6	3.2V
7	3.2V
8	3.2V

IC1300

PIN NO.	VOLTAGE
1	(2.6V)
2	(2.6V)
3	(0.1V)
4	(2.6V)
5	(2.6V)
6	(0.1V)
7	(0V)
8	(1.4V)
9	(0.1V)
10	(2.6V)
11	(1.4V)
12	(0.1V)
13	(2.6V)
14	(5.0V)

IC1301

PIN NO.	VOLTAGE
1	(5.0V)
2	(1.4V)
3	(1.4V)
4	(2.5V)
5	(2.5V)
6	(1.4V)
7	(1.4V)
8	(5.0V)

IC1302

PIN NO.	VOLTAGE
1	(1.5V)
2	(1.5V)
3	(2.5V)
4	(0V)
5	(2.5V)

( ):REC MODE

IC1601

PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	1.6V	22	1.6V
2	1.6V	23	1.6V
3	1.6V	24	0V
4	5.0V	25	3.2V
5	5.0V	26	3.2V
6	0V	27	1.6V
7	0V	28	1.6V
8	1.6V	29	0V
9	2.5V	30	1.6V
10	2.5V	31	2.5V
11	0V	32	2.5V
12	2.5V	33	0V
13	2.5V	34	2.5V
14	2.5V	35	2.5V
15	2.5V	36	1.6V
16	1.6V	37	1.6V
17	1.6V	38	5.0V
18	1.6V	39	5.0V
19	1.2V	40	1.6V
20	1.2V	41	5.0V
21	1.6V	42	0.9V

IC1801

PIN NO.	VOLTAGE
1	0V
2	5.0V
3	3.2V
4	3.1V
5	0V

IC1802

PIN NO.	VOLTAGE
1	0V
2	3.2V
3	2.6V

IC1702

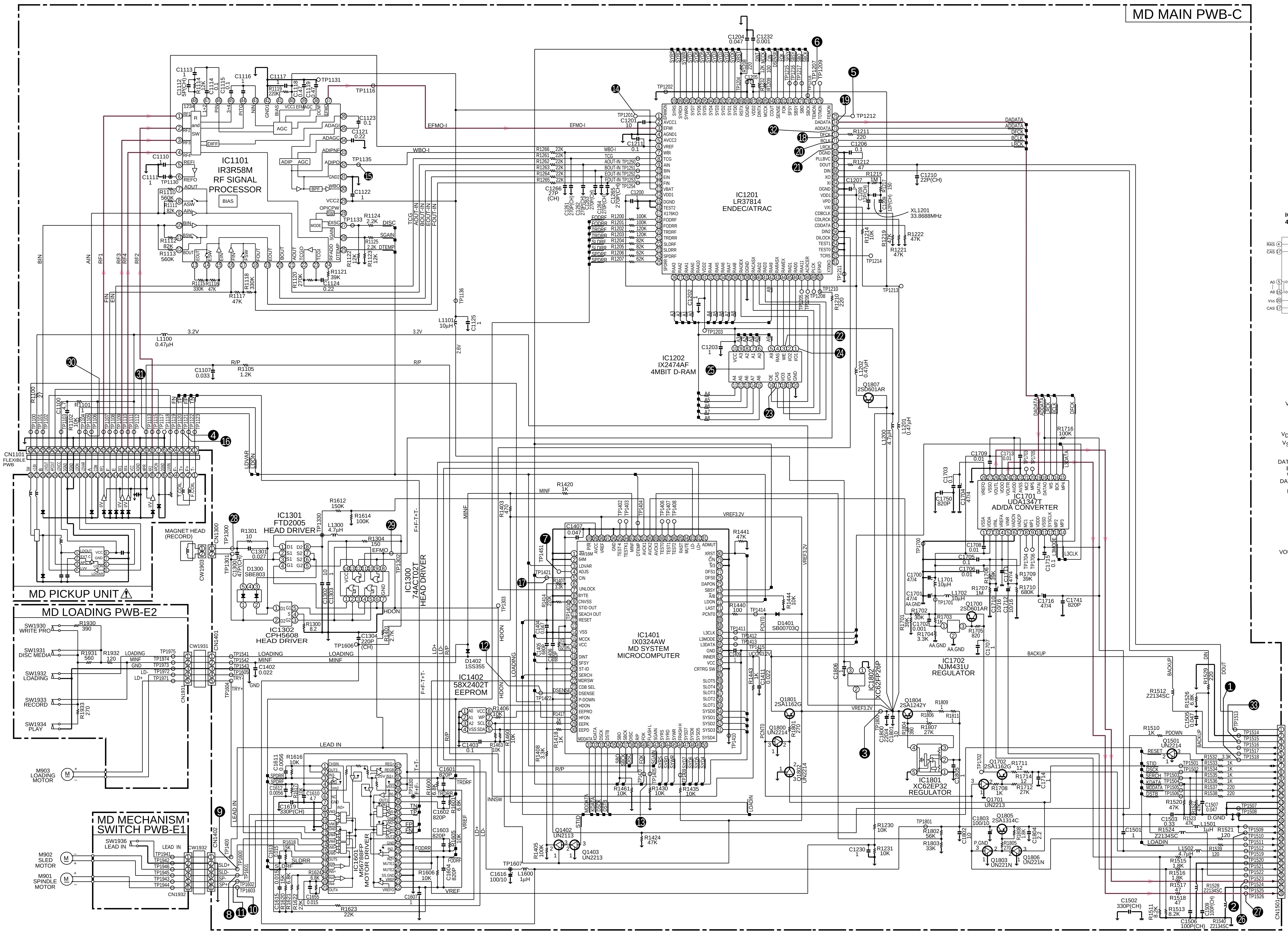
PIN NO.	VOLTAGE
1	2.46V
2	0V
3	3.85V

IC1701

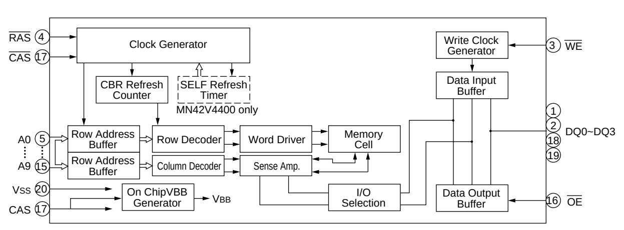
PIN NO.	VOLTAGE
1	0V
2	3.2V
3	1.6V
4	1.6V
5	1.6V
6	0V
7	3.2V
8	0V
9	0V
10	3.2V
11	0V
12	3.2V
13	3.2V
14	3.2V
15	3.2V
16	0V
17	1.6V
18	0V
19	0V
20	0V
21	0V
22	0V
23	0V
24	
25	0V
26	
27	0V
28	1.6V

■ SCHEMATIC DIAGRAM

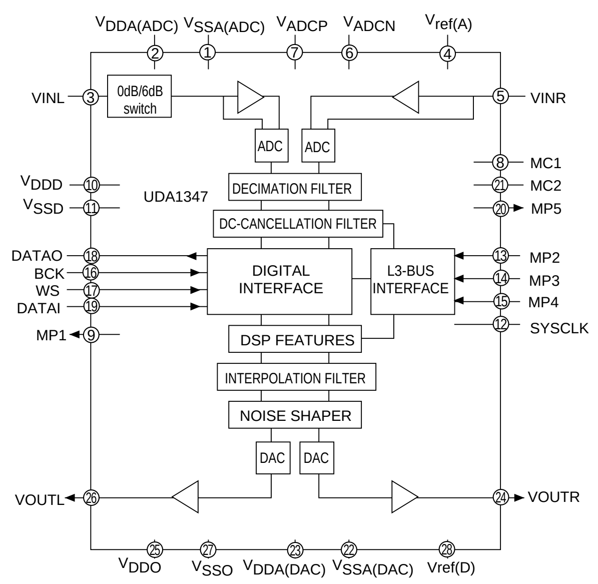
❶ to ㉝ : TEST POINT WAVEFORMS (See page E38/J36)



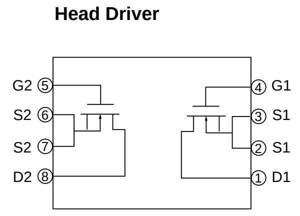
IC1202 : IX2474AF
4M Bit D-RAM



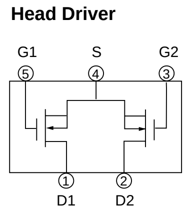
IC1701 : UDA1347T
AD Converter & DA Converter



IC1301 : FTD2005
Head Driver

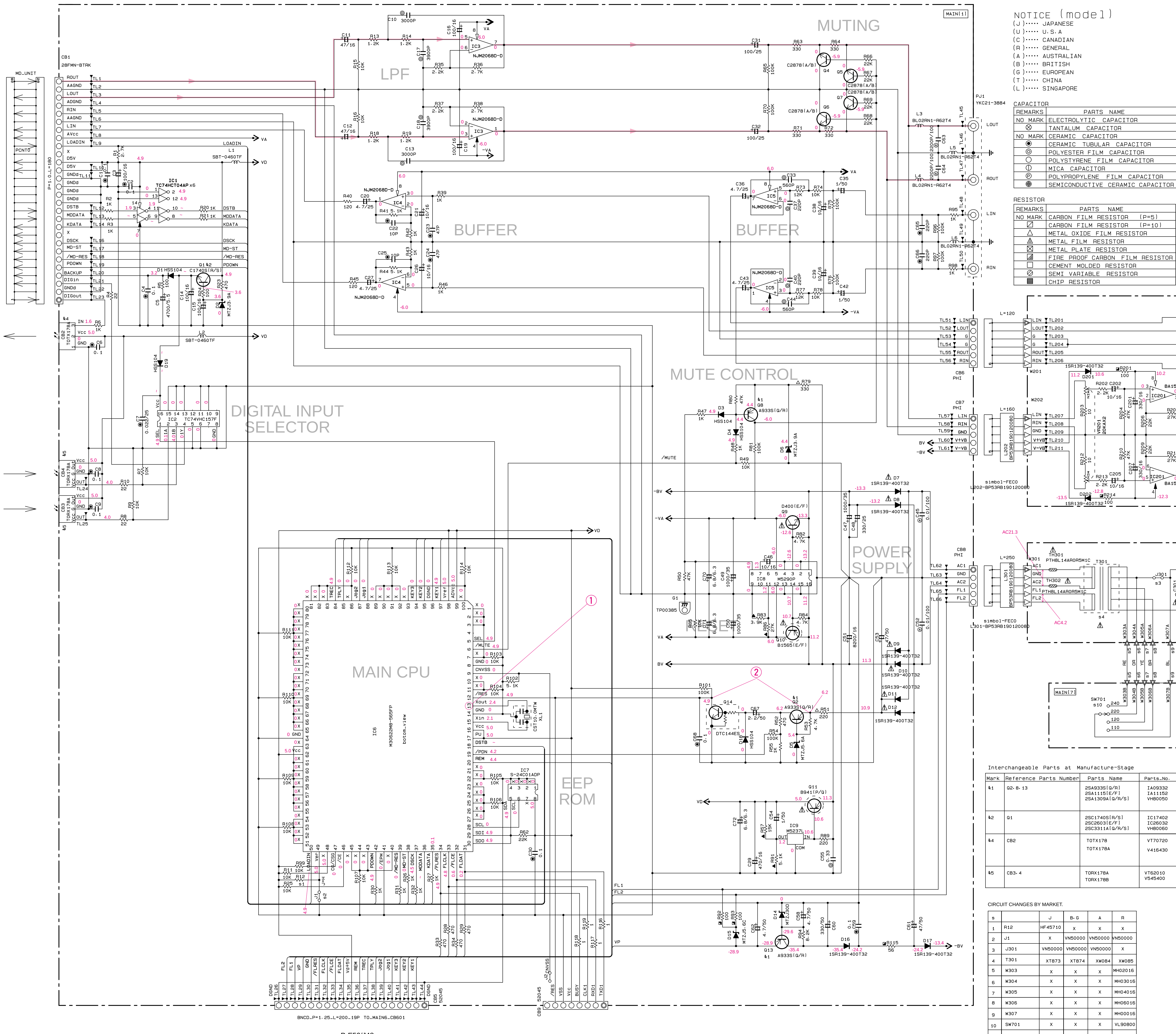


IC1302 : CPH5608
Head Driver



* All voltages are measured with a 10MΩ/DC electric volt meter.
* Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

■ SCHEMATIC DIAGRAM



NOTICE (model)
(J)····· JAPANESE
(U)····· U.S.A
(C)····· CANADIAN
(R)····· GENERAL
(A)····· AUSTRALIAN
(B)····· BRITISH
(G)····· EUROPEAN
(T)····· CHINA
(L)····· SINGAPORE

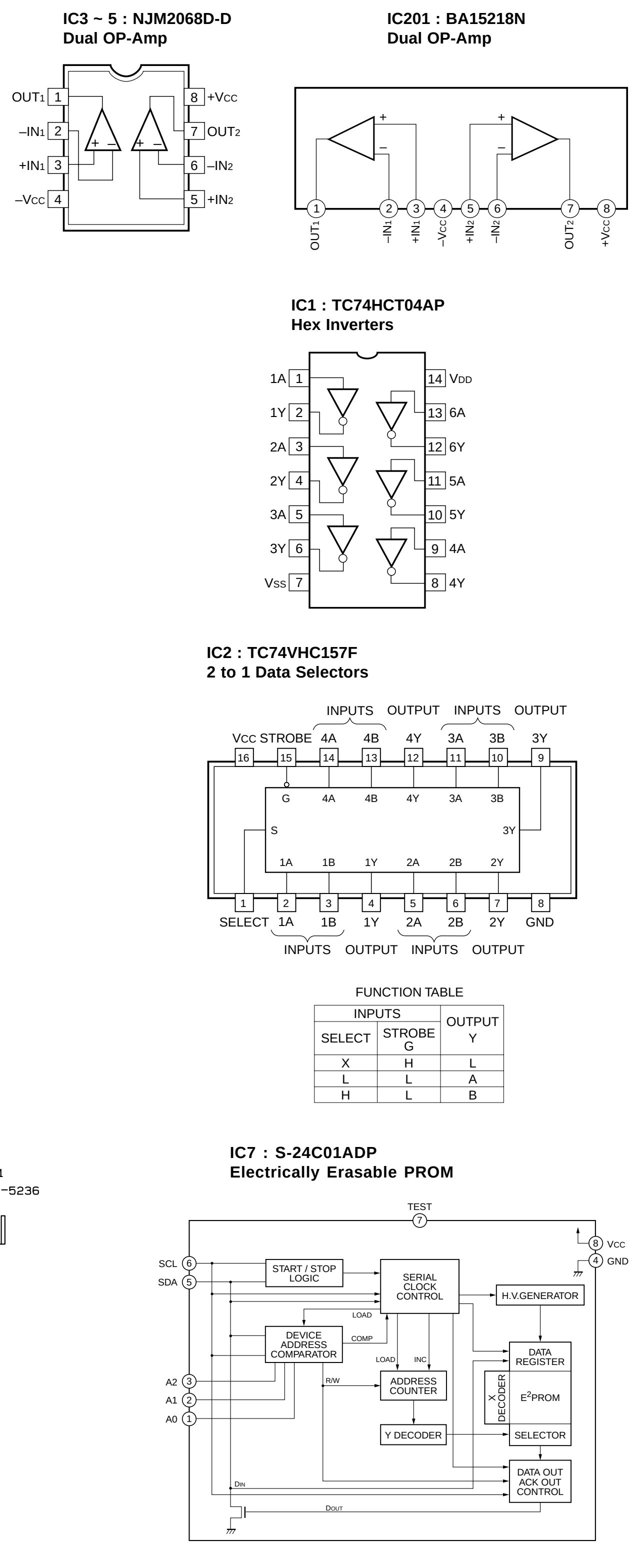
CAPACITOR

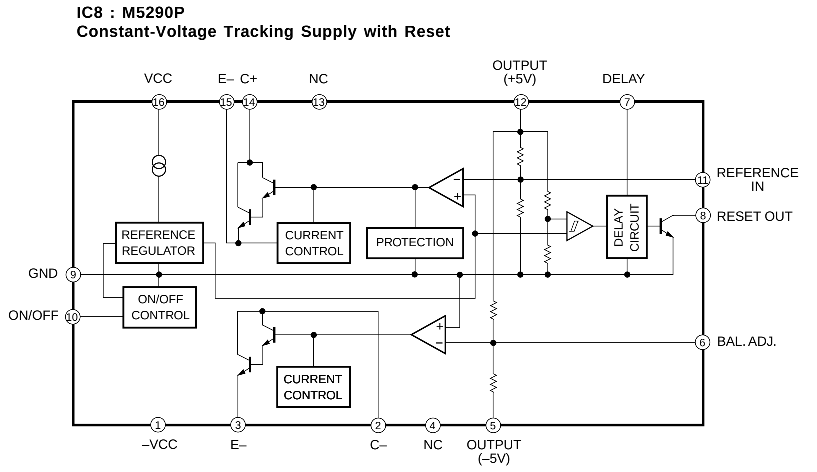
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
◉	CERAMIC TUBULAR CAPACITOR
◎	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⦶	MICA CAPACITOR
Ⓟ	POLYPROPYLENE FILM CAPACITOR
⊜	SEMICONDUCTIVE CERAMIC CAPACITOR

	LAST
R	114
C	68
D	19
Q	14
L	7
IC	9

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
⧄	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
⚠	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
▤	CHIP RESISTOR





Interchangeable Parts at Manufacture-Stage

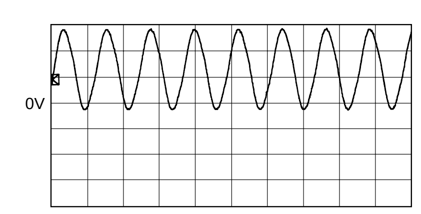
Mark	Reference Parts Number	Parts Name	Parts_No.
&1	Q2, 8, 13	2SA933S[Q/R] 2SA1115[E/F] 2SA1309A[Q/R/S]	IA09332 IA11152 VH80050
&2	Q1	2SC1740S[R/S] 2SC2603[E/F] 2SC3311A[Q/R/S]	IC17402 IC26032 VH80060
&4	CB2	TOTX178 TOTX178A	VT70720 V416430
&5	CB3, 4	TORX178A TORX178B	VT62010 V545400

CIRCUIT CHANGES BY MARKET.

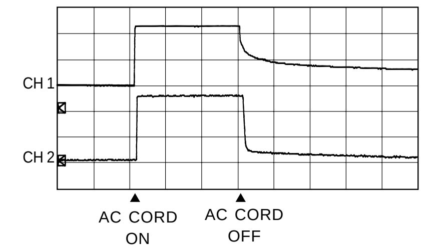
s		J	B, G	A	R
1	R12	HF45710	X	X	X
2	J1	X	VN50000	VN50000	VN50000
3	J301	VN50000	VN50000	VN50000	X
4	T301	XT873	XT874	XW084	XW085
5	W303	X	X	X	MH02016
6	W304	X	X	X	MH03016
7	W305	X	X	X	MH04016
8	W306	X	X	X	MH06016
9	W307	X	X	X	MH00016
10	SW701	X	X	X	VL90800
11					
12					
13					

X : NOT USED

Point ① (Pin 13 of IC6)
V : 2V/div H : 20 µsec/div
DC range 1 : 1 probe

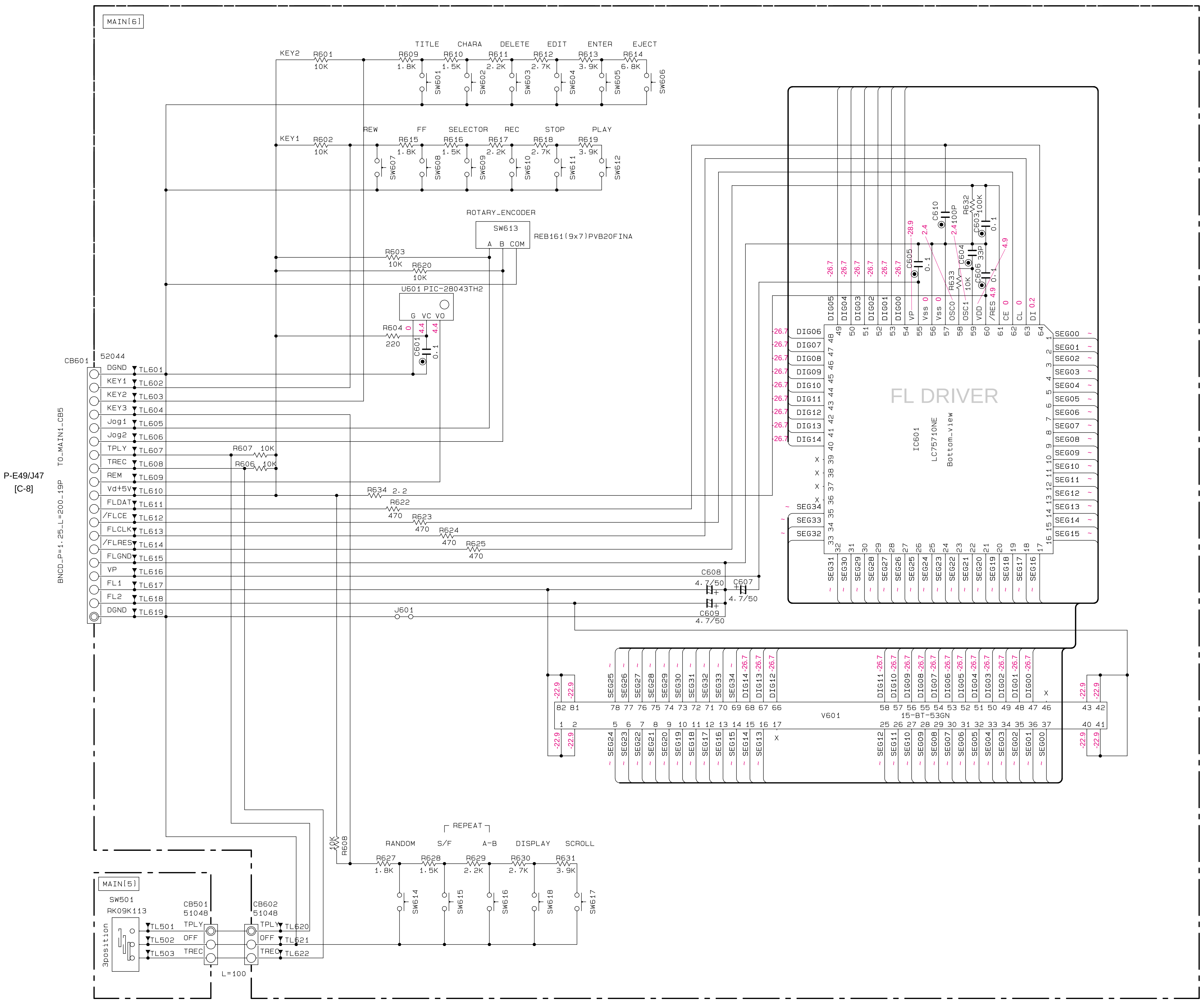


Point ②
CH1 : Emitter of Q2 / CH2 : Collector of Q14 — V : 2V/div CH1 / V : 2V/div CH2
H : 5 sec/div DC range 1 : 1 probe



* All voltages are measured with a 10MΩ/DC electric volt meter.
* Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

■ SCHEMATIC DIAGRAM



NOTICE (model)
(J)······ JAPANESE
(U)······ U.S.A
(C)······ CANADIAN
(R)······ GENERAL
(A)······ AUSTRALIAN
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(G)······ EUROPEAN
(T)······ CHINA
(L)······ SINGAPORE

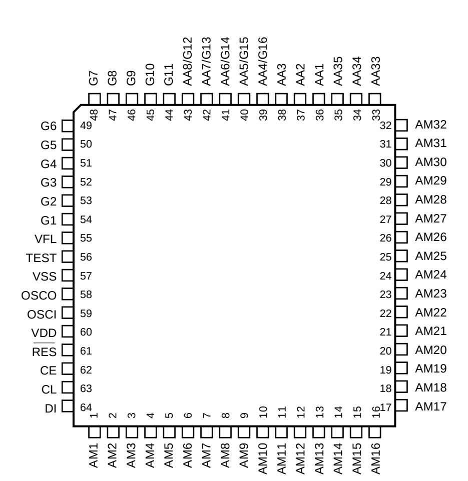
RESISTOR

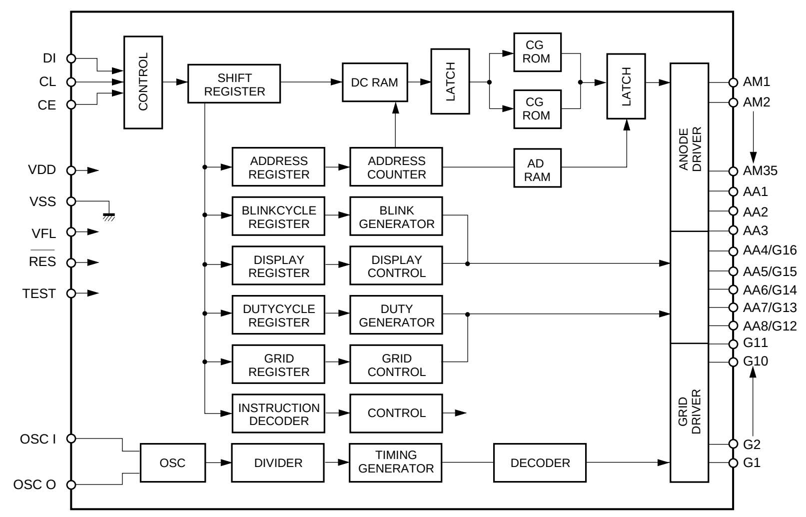
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
◿	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
⚠	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

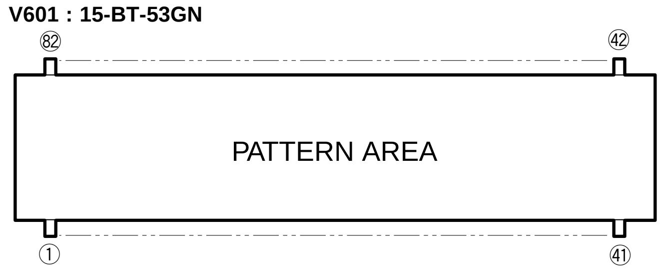
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
◉	CERAMIC TUBULAR CAPACITOR
◎	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
ⓘ	MICA CAPACITOR
Ⓟ	POLYPROPYLENE FILM CAPACITOR
◎	SEMICONDUCTIVE CERAMIC CAPACITOR

IC601 : LC75710NE
FL Driver





V601 : 15-BT-53GN



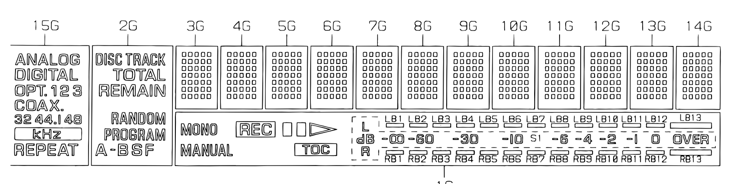
● **PIN CONNECTION**

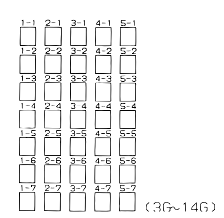
PIN NO.	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
CONNECTION	F1	F1	NP	NP	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	15G	14G	13G	NX	NX	NX	NX	NX	NX	NX	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	IC	NP	NP	F2	F2

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
CONNECTION	F1	F1	NP	NP	P25	P24	P23	P22	P21	P20	P19	P18	P17	P16	P15	P14	IC	NX	NX	NX	NX	NX	NX	NX	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NP	F2	F2

Note 1) F1, F2 .... Filament
2) NP .... No Pin
3) NX .... No extend Pin
4) P1~P35 ...... Datum Line
5) 1G~15G ..... Grid

● **GRID ASSIGMENT**





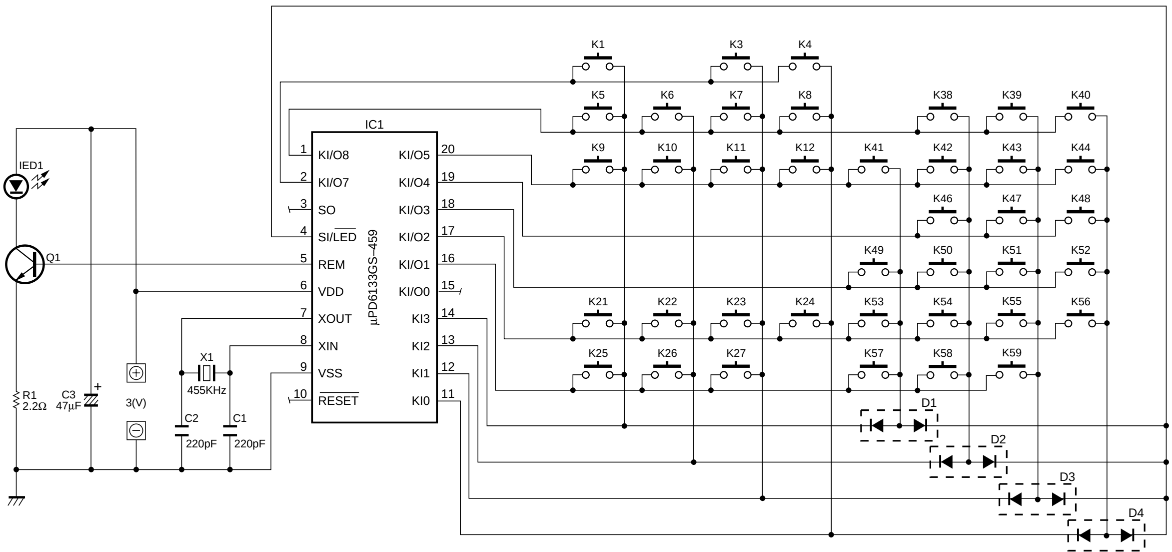
● **ANODE CONNECTION**

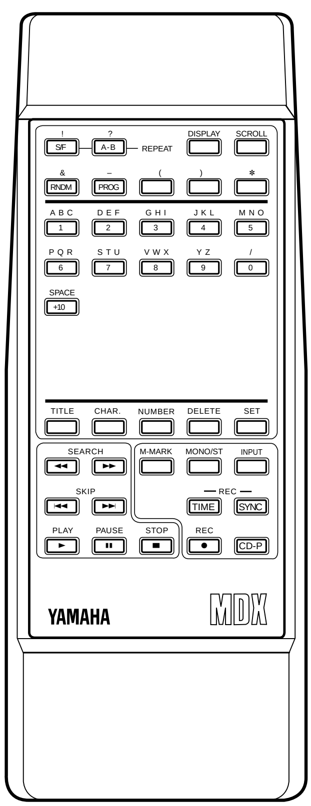
	1G	2G	3G~14G	15G
P1	–	–	1-1	–
P2	–	–	2-1	–
P3	TOC	–	3-1	–
P4	MANUAL	–	4-1	–
P5	▷	–	5-1	–
P6	▯▯	–	1-2	–
P7	REC	–	2-2	–
P8	MONO	–	3-2	–
P9	RB1	–	4-2	–
P10	RB2	–	5-2	–
P11	RB3	–	1-3	–
P12	RB4	–	2-3	–
P13	RB5	–	3-3	–
P14	RB6	DISC	4-3	–
P15	RB7	TRACK	5-3	–
P16	RB8	TOTAL	1-4	–
P17	RB9	REMAIN	2-4	–
P18	RB10	RANDOM	3-4	–
P19	RB11	PROGRAM	4-4	–
P20	RB12	A	5-4	–
P21	RB13	-B	1-5	–
P22	S1	S	2-5	–
P23	LB1	F	3-5	–
P24	LB2	–	4-5	ANALOG
P25	LB3	–	5-5	DIGITAL
P26	LB4	–	1-6	1
P27	LB5	–	2-6	2
P28	LB6	–	3-6	3
P29	LB7	–	4-6	OPT.
P30	LB8	–	5-6	COAX.
P31	LB9	–	1-7	32
P32	LB10	–	2-7	44.1
P33	LB11	–	3-7	48
P34	LB12	–	4-7	kHz
P35	LB13	–	5-7	REPEAT

* All voltages are measured with a 10MΩ/DC electric volt meter.
* Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

REMOTE CONTROL TRANSMITTER

■ SCHEMATIC DIAGRAM





Key No.	FUNCTION	CUSTOM (HEX)	DATA (HEX)
1	A–B ?	79	82
2		79	B6
3	DISPLAY	79	A5
4	SCROLL	79	A6
5	2 DEF	79	86
6	3 GHI	79	87
7	4 JKL	79	88
8	5 MNO	79	89
9	7 STU	79	8B
10	8 VWX	79	8C
11	9 YZ	79	8D
12	0 /	79	8E
13		79	B5
14		79	9D
15		79	9E
16		79	9F
17		79	94
18		79	95
19		79	96
20		79	97
21	SEARCH ◁◁	79	AC
22	SEARCH ▷▷	79	AD
23	M–MARK	79	B3
24	MONO/ST	79	B4
25	INPUT	79	A7
26	REC SYNC	79	B2
27	CD–P	79	02
28		79	B7
29		79	B8
30		79	B9

Key No.	FUNCTION	CUSTOM (HEX)	DATA (HEX)
31		79	BA
32		79	BB
33		79	98
34		79	99
35		79	9A
36		79	9B
37		79	9C
38	TITLE	79	A0
39	CHAR	79	A1
40	NUMBER	79	A2
41	DELETE	79	A4
42	SET	79	A3
43	SKIP ⏮	79	AB
44	SKIP ⏭	79	AE
45		79	B1
46	REC TIME	79	B0
47	PLAY ▷	79	A8
48	PAUSE ▯▯	79	A9
49	STOP □	79	AA
50	REC ○	79	AF
51	S / F !	79	81
52	RNDM &	79	83
53	PROG –	79	84
54	(	79	91
55	)	79	90
56	✻	79	92
57	1 ABC	79	85
58	6 PQR	79	8A
59	+10 SPACE	79	8F
60		79	93

CUSTOM CODE								
HEX	C0	C1	C2	C3	C4	C5	C6	C7
79	1	0	0	1	1	1	1	0

PARTS LIST

■ ELECTRICAL PARTS

■ **WARNING**
Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.

● Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	:	CHIP ALUMI. ELECTROLYTIC CAP
C.CE	:	CERAMIC CAP
C.CE.ARRAY	:	CERAMIC CAP ARRAY
C.CE.CHP	:	CHIP CERAMIC CAP
C.CE.ML	:	MULTILAYER CERAMIC CAP
C.CE.M.CHP	:	CHIP MULTILAYER CERAMIC CAP
C.CE.SAFTY	:	RECOGNIZED CERAMIC CAP
C.CE.TUBLR	:	CERAMIC TUBULAR CAP
C.CE.SMI	:	SEMI CONDUCTIVE CERAMIC CAP
C.EL	:	ELECTROLYTIC CAP
C.MICA	:	MICA CAP
C.ML.FLM	:	MULTILAYER FILM CAP
C.MP	:	METALLIZED PAPER CAP
C.MYLAR	:	MYLAR FILM CAP
C.MYLAR.ML	:	MULTILAYER MYLAR FILM CAP
C.PAPER	:	PAPER CAPACITOR
C.PLS	:	POLYSTYRENE FILM CAP
C.POL	:	POLYESTER FILM CAP
C.POLY	:	POLYETHYLENE FILM CAP
C.PP	:	POLYPROPYLENE FILM CAP
C.TNTL	:	TANTALUM CAP
C.TNTL.CHP	:	CHIP TANTALUM CAP
C.TRIM	:	TRIMMER CAP
CN	:	CONNECTOR
CN.BS.PIN	:	CONNECTOR, BASE PIN
CN.CANNON	:	CONNECTOR, CANNON
CN.DIN	:	CONNECTOR, DIN
CN.FLAT	:	CONNECTOR, FLAT CABLE
CN.POST	:	CONNECTOR, BASE POST
COIL.MX.AM	:	COIL, AM MIX
COIL.AT.FM	:	COIL, FM ANTENNA
COIL.DT.FM	:	COIL, FM DETECT
COIL.MX.FM	:	COIL, FM MIX
COIL.OUTPT	:	OUTPUT COIL
DIOD.ARRAY	:	DIODE ARRAY
DIODE.BRG	:	DIODE BRIDGE
DIODE.CHP	:	CHIP DIODE
DIODE.VAR	:	VARACTOR DIODE
DIOD.Z.CHP	:	CHIP ZENER DIODE
DIODE.ZENR	:	ZENER DIODE
DSCR.CE	:	CERAMIC DISCRIMINATOR
FER.BEAD	:	FERRITE BEADS
FER.CORE	:	FERRITE CORE
FET.CHP	:	CHIP FET
FL.DSPLY	:	FLUORESCENT DISPLAY
FLTR.CE	:	CERAMIC FILTER
FLTR.COMB	:	COMB FILTER MODULE
FLTR.LC.RF	:	LC FILTER ,EMI
GND.MTL	:	GROUND PLATE
GND.TERM	:	GROUND TERMINAL
HOLDER.FUS	:	FUSE HOLDER
IC.PRTCT	:	IC PROTECTOR
JUMPER.CN	:	JUMPER CONNECTOR
JUMPER.TST	:	JUMPER, TEST POINT
L.DTCT	:	LIGHT DETECTING MODULE
L.EMIT	:	LIGHT EMITTING MODULE
LED.DSPLY	:	LED DISPLAY
LED.INFRD	:	LED, INFRARED
MODUL.RF	:	MODULATOR, RF
PHOT.CPL	:	PHOTO COUPLER
PHOT.INTR	:	PHOTO INTERRUPTER
PHOT.RFLCT	:	PHOTO REFLECTOR
PIN.TEST	:	PIN, TEST POINT
PLST.RIVET	:	PLASTIC RIVET
R.ARRAY	:	RESISTOR ARRAY
R.CAR	:	CARBON RESISTOR
R.CAR.CHP	:	CHIP RESISTOR
R.CAR.FP	:	FLAME PROOF CARBON RESISTOR
R.FUS	:	FUSABLE RESISTOR
R.MTL.CHP	:	CHIP METAL FILM RESISTOR
R.MTL.FLM	:	METAL FILM RESISTOR
R.MTL.OXD	:	METAL OXIDE FILM RESISTOR
R.MTL.PLAT	:	METAL PLATE RESISTOR
RSNR.CE	:	CERAMIC RESONATOR
RSNR.CRYS	:	CRYSTAL RESONATOR
R.TW.CEM	:	TWIN CEMENT FIXED RESISTOR
R.WW	:	WIRE WOUND RESISTOR
SCR.BND.HD	:	BIND HEAD B-TITE SCREW
SCR.BW.HD	:	BW HEAD TAPPING SCREW
SCR.CUP	:	CUP TITE SCREW
SCR.TERM	:	SCREW TERMINAL
SCR.TR	:	SCREW, TRANSISTOR
SUPRT.PCB	:	SUPPORT, P.C.B.
SURG.PRTCT	:	SURGE PROTECTOR
SW.TACT	:	TACT SWITCH
SW.LEAF	:	LEAF SWITCH
SW.LEVER	:	LEVER SWITCH
SW.MICRO	:	MICRO SWITCH
SW.PUSH	:	PUSH SWITCH
SW.RT.ENC	:	ROTARY ENCODER
SW.RT.MTR	:	ROTARY SWITCH WITH MOTOR
SW.RT	:	ROTARY SWITCH
SW.SLIDE	:	SLIDE SWITCH
TERM.SP	:	SPEAKER TERMINAL
TERM.WRAP	:	WRAPPING TERMINAL
THRMST.CHP	:	CHIP THERMISTOR
TR.CHP	:	CHIP TRANSISTOR
TR.DGT	:	DIGITAL TRANSISTOR
TR.DGT.CHP	:	CHIP DIGITAL TRANSISTOR
TRANS	:	TRANSFORMER
TRANS.PULS	:	PULSE TRANSFORMER
TRANS.PWR	:	POWER TRANSFORMER ASS'y
TUNER.AM	:	TUNER PACK, AM
TUNER.FM	:	TUNER PACK, FM
TUNER.PK	:	FRONT-END TUNER PACK
VR	:	ROTARY POTENTIOMETER
VR.MTR	:	POTENTIOMETER WITH MOTOR
VR.SW	:	POTENTIOMETER WITH ROTARY SW
VR.SLIDE	:	SLIDE POTENTIOMETER
VR.TRIM	:	TRIMMER POTENTIOMETER

Note) Those parts marked with "#" are not included in the P.C.B. ass'y.

P.C.B. MAIN

	Schm Ref.	PART NO.	Description		
*		V5731000	P.C.B.	MAIN(R)	
*		V5731100	P.C.B.	MAIN(A)	
*		V5731200	P.C.B.	MAIN(BG)	
	CB1	V3733000	CN	28P	
	CB2	VT707200	L.EMIT	TOTX178	
	CB3	VT620100	L.DTCT	TORX178A	
	CB4	VT620100	L.DTCT	TORX178A	
	CB5	VQ047400	CN.BS.PIN	19P	
	CB6	VB390200	CN.BS.PIN	6P	
	CB7	VB390100	CN.BS.PIN	5P	
	CB8	VB390100	CN.BS.PIN	5P	
	CB9	VP682200	CN.BS.PIN	8P	
	CB301	VG879900	CN.BS.PIN	2P	
	CB401	VP245600	CN	2P	
	CB501	Vi878100	CN.BS.PIN	3P	
	CB601	VQ044900	CN.BS.PIN	19P	
	CB602	Vi878100	CN.BS.PIN	3P	
	C1	VJ599100	C.CE.TUBLR	0.1uF	50V
	C2	VJ599100	C.CE.TUBLR	0.1uF	50V
	C3	UR838100	C.EL	100uF	16V
	C4	VJ599100	C.CE.TUBLR	0.1uF	50V
	C5	VF992600	C.EL	4700uF	5.5V
	C6	VJ599100	C.CE.TUBLR	0.1uF	50V
	C7	VG280100	C.CE.TUBLR	0.022uF	25V
	C8	VJ599100	C.CE.TUBLR	0.1uF	50V
	C9	VJ599100	C.CE.TUBLR	0.1uF	50V
	C10	UA653300	C.MYLAR	3000pF	50V
	C11	VQ083000	C.EL	47uF	16V
	C12	VQ083000	C.EL	47uF	16V
	C13	UA653300	C.MYLAR	3000pF	50V
	C14	UR838100	C.EL	100uF	16V
	C15	UR838100	C.EL	100uF	16V
	C16	VG287600	C.EL	100uF	25V
	C17	UA953390	C.MYLAR	3900pF	50V
	C18	UA953390	C.MYLAR	3900pF	50V
	C19	VG287600	C.EL	100uF	25V
	C20	UR846470	C.EL	4.7uF	25V
	C21	UR837100	C.EL	10uF	16V
	C22	VF466600	C.CE.TUBLR	10pF	50V
	C23	VF466700	C.CE.TUBLR	47pF	50V
	C24	VF466700	C.CE.TUBLR	47pF	50V
	C25	VF466600	C.CE.TUBLR	10pF	50V
	C26	UR837100	C.EL	10uF	16V
	C27	UR846470	C.EL	4.7uF	25V
	C29	UR838470	C.EL	470uF	16V
	C30	VJ599100	C.CE.TUBLR	0.1uF	50V
	C31	VQ569900	C.EL	100uF	25V
	C32	VQ569900	C.EL	100uF	25V
	C33	UA952560	C.MYLAR	560pF	50V
	C35	UR866100	C.EL	1uF	50V
	C36	UR846470	C.EL	4.7uF	25V
	C37	UA952220	C.MYLAR	220pF	50V
	C38	UR837100	C.EL	10uF	16V

⁎ New Parts

	Schm Ref.	PART NO.	Description		
	C39	UR837100	C.EL	10uF	16V
	C40	UA952220	C.MYLAR	220pF	50V
	C42	UR866100	C.EL	1uF	50V
	C43	UR846470	C.EL	4.7uF	25V
	C44	UA952560	C.MYLAR	560pF	50V
	C45	VK534100	C.PP	0.01uF	100V
	C46	UR837100	C.EL	10uF	16V
	C47	VG289800	C.EL	1000uF	50V
	C48	VG289100	C.EL	330uF	25V
	C49	VG289800	C.EL	1000uF	50V
	C50	VG289800	C.EL	1000uF	50V
*	C51	UJ739820	C.EL	8200uF	16V
	C52	VK534100	C.PP	0.01uF	100V
	C53	VG291200	C.EL	47uF	50V
	C54	UR866100	C.EL	1uF	50V
	C55	VR169000	C.MYLAR.ML	ECQ-V1H334JL3	
	C58	UR866470	C.EL	4.7uF	50V
	C59	VJ599100	C.CE.TUBLR	0.1uF	50V
	C60	UR868330	C.EL	330uF	50V
	C61	UR867470	C.EL	47uF	50V
	C62	UR866470	C.EL	4.7uF	50V
	C63	VL883800	C.PP	2200pF	100V
	C64	VL883800	C.PP	2200pF	100V
	C65	VG278400	C.CE.TUBLR	220pF	50V
	C66	VG278400	C.CE.TUBLR	220pF	50V
	C67	UR866220	C.EL	2.2uF	50V
	C68	VJ599100	C.CE.TUBLR	0.1uF	50V
	C70	VR498100	C.EL	6.8uF	6.3V
	C71	VR498100	C.EL	6.8uF	6.3V
	C72	VR498100	C.EL	6.8uF	6.3V
	C201	UR838330	C.EL	330uF	16V
	C202	UR837100	C.EL	10uF	16V
	C203	VJ599100	C.CE.TUBLR	0.1uF	50V
	C204	VJ599100	C.CE.TUBLR	0.1uF	50V
	C205	UR837100	C.EL	10uF	16V
	C206	VJ599100	C.CE.TUBLR	0.1uF	50V
	C207	UR838330	C.EL	330uF	16V
⚠	C301	VS741700	C.CE.SAFTY	0.01uF	275V
⚠	C302	VS741700	C.CE.SAFTY	0.01uF	275V
⚠	C401	VS741700	C.CE.SAFTY	0.01uF	275V
	C601	VJ599100	C.CE.TUBLR	0.1uF	50V
	C603	VJ599100	C.CE.TUBLR	0.1uF	50V
	C604	VG277000	C.CE.TUBLR	33pF	50V
	C605	VJ599100	C.CE.TUBLR	0.1uF	50V
	C606	VJ599100	C.CE.TUBLR	0.1uF	50V
	C607	UM416470	C.EL	4.7uF	50V
	C608	UM416470	C.EL	4.7uF	50V
	C609	UM416470	C.EL	4.7uF	50V
	C610	VF466800	C.CE.TUBLR	100pF	50V
	D1	VD631600	DIODE	1SS133,176	
*	D2	VG436500	DIODE.ZENR	MTZJ3.9A	3.9V
	D3	VD631600	DIODE	1SS133,176	
	D4	VD631600	DIODE	1SS133,176	

⁎ New Parts

MDX-596

P.C.B. MAIN

	Schm Ref.	PART NO.	Description	
*	D5	VG437600	DIODE.ZENR	MTZJ5.6A 5.6V
*	D6	VG436500	DIODE.ZENR	MTZJ3.9A 3.9V
⚠	D7	VU264100	DIODE	1SR139-400
⚠	D8	VU264100	DIODE	1SR139-400
⚠	D9	VU264100	DIODE	1SR139-400
⚠	D10	VU264100	DIODE	1SR139-400
⚠	D11	VU264100	DIODE	1SR139-400
⚠	D12	VU264100	DIODE	1SR139-400
*	D14	VG443500	DIODE.ZENR	MTZJ30D 30V
	D15	VG437800	DIODE.ZENR	MTZJ5.6C 5.6V
	D16	VU264100	DIODE	1SR139-400
	D17	VU264100	DIODE	1SR139-400
	D18	VD631600	DIODE	1SS133,176
	D19	VD631600	DIODE	1SS133,176
	D201	VU264100	DIODE	1SR139-400
	D202	VU264100	DIODE	1SR139-400
	G1	VR463400	TERM.GND	D3.5 TP00385
*	HS1	V5094900	HEAT.SINK	PUH46-50
	HS2	V2984900	HEAT.SINK	PUH16-25
	IC1	XA830A00	IC	TC74HCT04AP INV
*	IC2	XN966A00	IC	TC74VHC157F DATA-S
	IC3	XA987A00	IC	NJM2068D-D
	IC4	XA987A00	IC	NJM2068D-D
	IC5	XA987A00	IC	NJM2068D-D
*	IC6	XY834A00	IC	CPU
	IC7	XS070A00	IC	S-24C01ADP EEPROM
	IC8	XD201A00	IC	M5290P
	IC9	XQ667A00	IC	M5237L
	IC201	XG938A00	IC	BA15218N
	IC601	XR188A00	IC	LC75710NE FLD
	JK201	V2086700	JACK.PHONE	YKB21-5236
	L1	VD473700	COIL	60uH
	L2	VD473700	COIL	60uH
	L3	GE300610	FER.BEAD	BL02RN1-R62T4
	L4	GE300610	FER.BEAD	BL02RN1-R62T4
	L5	GE300610	FER.BEAD	BL02RN1-R62T4
	L6	GE300610	FER.BEAD	BL02RN1-R62T4
	L202	Vi491100	FER.CORE	BP53RB19012080M
	L203	VD473700	COIL	60uH
	L204	VD473700	COIL	60uH
	L205	VD473700	COIL	60uH
	L301	Vi491100	FER.CORE	BP53RB19012080M
⚠	L302	VH227500	FLTR	20uH SU10VD-10020
	PJ1	V3007700	JACK.PIN	4P
	PN1	V3750200	PIN	L=70
	PN2	V3750200	PIN	L=70
	Q1	iC174020	TR	2SC1740S R,S
	Q2	iA093320	TR	2SA933S Q,R
	Q4	iC287820	TR	2SC2878 A,B
	Q5	iC287820	TR	2SC2878 A,B
	Q6	iC287820	TR	2SC2878 A,B
	Q7	iC287820	TR	2SC2878 A,B
	Q8	iA093320	TR	2SA933S Q,R

⋆ New Parts

	Schm Ref.	PART NO.	Description		
⚠	Q9	iD040040	TR	2SD400	
⚠	Q10	VS883300	TR	2SB1565 E,F	
⚠	Q11	VC141900	TR	2SB941 P,Q	
	Q13	iA093320	TR	2SA933S Q,R	
	Q14	VG722000	TR.DGT	DTC144ES	
	R51	VP940600	R.MTL.OXD	220Ω	1W
*	R57	VP441800	R.MTL.FLM	15KΩ	1/4W
	R79	VP940700	R.MTL.OXD	330Ω	1W
	R83	VP440400	R.MTL.FLM	3.9KΩ	1/4W
	R86	VP442400	R.MTL.FLM	27KΩ	1/4W
*	R91	VP440700	R.MTL.FLM	5.1K Ω	1/4W
	R92	HV755100	R.CAR.FP	100Ω	1/4W
	R93	HV755100	R.CAR.FP	100Ω	1/4W
	R115	HV754560	R.CAR.FP	56Ω	1/4W
	R201	HV755100	R.CAR.FP	100Ω	1/4W
	R214	HV755100	R.CAR.FP	100Ω	1/4W
	ST1	V4040500	SCR.TERM	M3	
⚠	SW401	VZ364100	SW.PUSH	SDDLD1-A2-F-1	
	SW501	VZ364300	SW.RT	RK09K113	
	SW601	VG392900	SW.TACT	SKHVAA	
	SW602	VG392900	SW.TACT	SKHVAA	
	SW603	VG392900	SW.TACT	SKHVAA	
	SW604	VG392900	SW.TACT	SKHVAA	
	SW605	VG392900	SW.TACT	SKHVAA	
	SW606	VG392900	SW.TACT	SKHVAA	
	SW607	VG392900	SW.TACT	SKHVAA	
	SW608	VG392900	SW.TACT	SKHVAA	
	SW609	VG392900	SW.TACT	SKHVAA	
	SW610	VG392900	SW.TACT	SKHVAA	
	SW611	VG392900	SW.TACT	SKHVAA	
	SW612	VG392900	SW.TACT	SKHVAA	
*	SW613	V5286000	SW.RT.ENC	REB161	
	SW614	VG392900	SW.TACT	SKHVAA	
	SW615	VG392900	SW.TACT	SKHVAA	
	SW616	VG392900	SW.TACT	SKHVAA	
	SW617	VG392900	SW.TACT	SKHVAA	
	SW618	VG392900	SW.TACT	SKHVAA	
⚠	SW701	VL908000	VOLT.SELCT	ESE-370(R)	
⚠	T301	XT874A00	TRANS.PWR	(BG)	
⚠*	T301	XW084A00	TRANS.PWR	(A)	
⚠*	T301	XW085A00	TRANS.PWR	(R)	
⚠	TH301	VT865700	POSISTOR	PTH8L14AR0R5M1C030	
⚠	TH302	VT865700	POSISTOR	PTH8L14AR0R5M1C030	
	U601	V2856200	L.DTCT	PIC-28043TH2	
	V601	V3200000	FL.DSPLY	15-BT-53G	
	VR201	V3703700	VR	A20KΩ	
	VR202	V3703700	VR	A20KΩ	
	XL1	VQ791000	RSNR.CE	10MHz	
		V3747500	SUPRT		
		VR519500	SHEET.FL	GD	
		V3747400	SPACER.FL	T4x6x18	
		EG330030	SCR.BND.HD	3x6	FCRM3-BL

⋆ New Parts

P.C.B. MD MAIN

	Schm Ref.	PART NO.	Description	Remarks		
			P.C.B.	MD MAIN		
	C1100	AAX02530	C.CHP	4.7uF	10V	RCKZ0003AWZZ
	C1107	AAX02650	C.CHP	0.033uF	16V	VCKYCY1CB333K
	C1110	AAX02750	C.CHP	1uF	6.3V	VCKYTV0JB105K
	C1111	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
*	C1112	AAX17430	C.CHP	5pF	50V	VCCCCY1HH5R0C
	C1113	AAX02750	C.CHP	1uF	6.3V	VCKYTV0JB105K
*	C1114	AAX17460	C.CHP	0.1uF	16V	VCKYCY1CB104K
*	C1115	AAX17460	C.CHP	0.1uF	16V	VCKYCY1CB104K
	C1116	AAX02750	C.CHP	1uF	6.3V	VCKYTV0JB105K
	C1117	AAX02750	C.CHP	1uF	6.3V	VCKYTV0JB105K
	C1118	AAX02760	C.CHP	0.47uF	16V	VCKYTV1CB474K
	C1119	AAX02760	C.CHP	0.47uF	16V	VCKYTV1CB474K
*	C1121	AAX17530	C.CHP	0.22uF	16V	VCKYTV1CB224K
	C1122	AAX02750	C.CHP	1uF	6.3V	VCKYTV0JB105K
*	C1123	AAX17460	C.CHP	0.1uF	16V	VCKYCY1CB104K
*	C1124	AAX17530	C.CHP	0.22uF	16V	VCKYTV1CB224K
	C1125	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1200	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1201	AAX02520	C.CHP	10uF	10V	RCKZ0002AWZZ
	C1202	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1203	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1204	AAX02660	C.CHP	0.047uF	16V	VCKYCY1CB473K
	C1205	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
*	C1206	AAX17460	C.CHP	0.1uF	16V	VCKYCY1CB104K
	C1207	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1208	AAX02550	C.CHP	12pF	50V	VCCCCY1HH120J
	C1209	AAX02550	C.CHP	12pF	50V	VCCCCY1HH120J
	C1210	AAX02560	C.CHP	22pF	50V	VCCCCY1HH220J
	C1211	AAX02670	C.CHP	0.1uF	25V	VCKYCY1EF104Z
	C1230	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1261	AAX02580	C.CHP	270pF	50V	VCCCCY1HH271J
	C1262	AAX02580	C.CHP	270pF	50V	VCCCCY1HH271J
	C1263	AAX02580	C.CHP	270pF	50V	VCCCCY1HH271J
	C1264	AAX02580	C.CHP	270pF	50V	VCCCCY1HH271J
	C1265	AAX02580	C.CHP	270pF	50V	VCCCCY1HH271J
*	C1266	AAX17420	C.CHP	27pF	50V	VCCCCY1HH270J
*	C1300	AAX17450	C.CHP	47pF	50V	VCCCTV1HH470J
	C1301	AAX02640	C.CHP	0.027uF	16V	VCKYCY1CB273K
*	C1302	AAX17410	C.CHP	10uF	10V	RC-KZ0002AWZZ
	C1303	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
*	C1304	AAX17440	C.CHP	220PpF	50V	VCCCTV1HH221J
	C1402	AAX02630	C.CHP	0.022uF	16V	VCKYCY1CB223K
	C1403	AAX02670	C.CHP	0.1uF	25V	VCKYCY1EF104Z
	C1404	AAX02660	C.CHP	0.047uF	16V	VCKYCY1CB473K
	C1405	AAX02700	C.CHP	680pF	50V	VCKYCY1HB681K
	C1406	AAX02700	C.CHP	680pF	50V	VCKYCY1HB681K
	C1407	AAX02660	C.CHP	0.047uF	16V	VCKYCY1CB473K
	C1409	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1411	AAX02630	C.CHP	0.022uF	16V	VCKYCY1CB223K
	C1501	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1503	AAX02720	C.CHP	0.33uF	16V	VCKYTQ1CB334K
	C1505	AAX02660	C.CHP	0.047uF	16V	VCKYCY1CB473K

⁎ New Parts

	Schm Ref.	PART NO.	Description	Remarks		
	C1506	AAX02540	C.CHP	100pF	50V	VCCCCY1HH101J
	C1507	AAX02660	C.CHP	0.047uF	16V	VCKYCY1CB473K
	C1509	AAX02540	C.CHP	100pF	50V	VCCCCY1HH101J
	C1601	AAX02610	C.CHP	820pF	50V	VCCSCY1HL821J
	C1602	AAX02680	C.CHP	1500pF	50V	VCKYCY1HB152K
*	C1603	AAX17500	C.CHP	1200pF	50V	VCKYCY1HB122K
	C1604	AAX02610	C.CHP	820pF	50V	VCCSCY1HL821J
	C1606	AAX02520	C.CHP	10uF	10V	RCKZ0002AWZZ
	C1607	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1610	AAX02530	C.CHP	4.7uF	10V	RCKZ0003AWZZ
*	C1611	AAX17510	C.CHP	0.0056uF	50V	VCKYCY1HB272K
*	C1613	AAX17480	C.CHP	0.015uF	25V	VCKYCY1EB822K
	C1616	AAX02490	C.EL.CHP	100pF	10V	VCEAPS107AF1A
	C1619	AAX02590	C.CHP	330pF	50V	VCCCCY1HH331J
*	C1655	AAX17470	C.CHP	0.015uF	25V	VCKYCY1EB153K
	C1700	AAX02510	C.EL.CHP	47uF	4V	VCEAPS476AF0G
	C1701	AAX02510	C.EL.CHP	47uF	4V	VCEAPS476AF0G
*	C1702	AAX17490	C.CHP	0.001uF	50V	VCKYCY1HB102K
	C1703	AAX02670	C.CHP	0.1uF	25V	VCKYCY1EF104Z
	C1704	AAX02510	C.EL.CHP	47uF	4V	VCEAPS476AF0G
	C1705	AAX02670	C.CHP	0.1uF	25V	VCKYCY1EF104Z
	C1706	AAX02830	C.CHP	0.01uF	50V	VCKYTV1HF103Z
	C1707	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1708	AAX02830	C.CHP	0.01uF	50V	VCKYTV1HF103Z
	C1709	AAX02830	C.CHP	0.01uF	50V	VCKYTV1HF103Z
	C1710	AAX02480	C.EL.CHP	10uF	16V	RCEZ1620AFZZ
	C1711	AAX02510	C.EL.CHP	47uF	4V	VCEAPS476AF0G
	C1712	AAX02480	C.EL.CHP	10uF	16V	RCEZ1620AFZZ
	C1713	AAX02830	C.CHP	0.01uF	50V	VCKYTV1HF103Z
	C1714	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
*	C1715	AAX17520	C.CHP	0.1uF	16V	VCKYTV1CB104K
	C1716	AAX02510	C.EL.CHP	47uF	4V	VCEAPS476AF0G
	C1741	AAX02610	C.CHP	820pF	50V	VCCSCY1HL821J
	C1750	AAX02610	C.CHP	820pF	50V	VCCSCY1HL821J
	C1800	AAX02500	C.EL.CHP	220uF	4V	VCEAPS227AF0G
	C1801	AAX02520	C.CHP	10uF	10V	RCKZ0002AWZZ
	C1802	AAX02520	C.CHP	10uF	10V	RCKZ0002AWZZ
	C1803	AAX02490	C.EL.CHP	100pF	10V	VCEAPS107AF1A
	C1804	AAX02740	C.CHP	2.2uF	16V	VCKYTQ1CF225Z
	C1805	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
	C1806	AAX02780	C.CHP	1uF	16V	VCKYTV1CF105Z
*	CN1300	AAX17630	CN.PLUG	2P		QCNCM970BAFZZ
	CN1401	AAX01390	CN.PLUG	5P		QCNCWXC05AFZZ
*	CN1402	AAX17640	CN.PLUG	6P		QCNCWXC06AFZZ
	CN1931	AAX01390	CN.PLUG	5P		QCNCWXC05AFZZ
*	CN1932	AAX17640	CN.PLUG	6P		QCNCWXC06AFZZ
*	CW1501	AAX17620	CN.FLAT	28P		QCNWN1549AWZZ
*	CW1931	AAX17600	CN.FLAT	5P		QCNWN1512AWZZ
*	CW1932	AAX17610	CN.FLAT	6P		QCNWN1513AWZZ
*	D1300	AAX17400	DIODE	SBE803		VHDSBE803//1
	D1401	AAX02460	DIODE	SB00703Q		VHDSB00703Q1
*	D1402	AAX17390	DIODE	1SS355		VHD1SS355//1
*	IC1101	AAX17300	IC	IR3R58M		VHIIR3R58M/1

⁎ New Parts

MDX-596

P.C.B. MD MAIN

	Schm Ref.	PART NO.	Description	Remarks		
*	IC1201	AAX17310	IC	LR37814		VHILR37814/1
	IC1202	AAX02150	IC	IX2474AF		RHIX2474AFZZ
*	IC1300	AAX17270	IC	74ACT02T		VHI74ACT02T1
*	IC1301	AAX17290	IC	FTD2005		VHIFTD2005/1
*	IC1302	AAX17280	IC	CPH5608		VHICPH5608/1
*	IC1401	AAX17250	IC	IX0324AW		RHIX0349AWZZ
*	IC1402	AAX17260	IC	58X2402T		VHI58X2402T1
*	IC1601	AAX17320	IC	M56788FP		VHIM56788FP1
*	IC1701	AAX17330	IC	UDA1347T		VHIUDA1347T1
	IC1702	AAX02190	IC	NJM431U		VHINJM431U/1
	IC1801	AAX02220	IC	XC62EP32		VHIXC62EP321
*	IC1802	AAX17340	IC	XC62FP26		VHIXC62FP26P1
	L1100	AAX02230	IC	0.47uH		VPBNNR47K0000
	L1101	AAX02330	COIL	10uH		VPBNN100K0000
	L1200	AAX02340	COIL	4.7uH		VPBNN4R7K0000
	L1201	AAX02230	IC	0.47uH		VPBNNR47K0000
*	L1300	AAX17350	COIL	4.7uH		RCILC0358AFZZ
	L1501	AAX02320	COIL	1uH		RCILZ0016AWZZ
	L1502	AAX02340	COIL	4.7uH		VPBNN4R7K0000
	L1600	AAX02320	COIL	1uH		RCILZ0016AWZZ
	L1701	AAX02330	COIL	10uH		VPBNN100K0000
	L1702	AAX02330	COIL	10uH		VPBNN100K0000
*	Q1402	AAX17560	TR	UN2113		VSUN2113///1
*	Q1403	AAX17570	TR	UN2213		VSUN2213///1
*	Q1501	AAX17580	TR	UN2214		VSUN2214///1
*	Q1700	AAX17550	TR	2SD601 AR		VS2SD601AR/1
*	Q1701	AAX17570	TR	UN2213		VSUN2213///1
	Q1702	AAX02840	TR	2SA1162G		VS2SA1162G/1
*	Q1800	AAX17580	TR	UN2214		VSUN2214///1
	Q1801	AAX02840	TR	2SA1162G		VS2SA1162G/1
*	Q1802	AAX17580	TR	UN2214		VSUN2214///1
*	Q1803	AAX17590	TR	UN221 N		VSUN221N///1
*	Q1804	AAX17540	TR	2SA1242 Y		VS2SA1242Y/1
	Q1805	AAX02850	TR	2SA1314C		VS2SA1314C/1
*	Q1806	AAX17590	TR	UN221 N		VSUN221N///1
*	Q1807	AAX17550	TR	2SD601AR		VS2SD601AR/1
	R1100	AAX03080	R.CAR.CHP	27Ω	1/8W	VRSTQ2BB270J
	R1101	AAX01880	R.CAR.CHP	1Ω	1/16W	VRSCY1JB1R0J
	R1102	AAX01760	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103J
	R1105	AAX01810	R.CAR.CHP	1.2KΩ	1/16W	VRSCY1JB122J
*	R1110	AAX17810	R.CAR.CHP	560KΩ	1/16W	VRSCY1JB564F
*	R1111	AAX17840	R.CAR.CHP	82KΩ	1/16W	VRSCY1JB823F
*	R1112	AAX17840	R.CAR.CHP	82KΩ	1/16W	VRSCY1JB823F
*	R1113	AAX17810	R.CAR.CHP	560KΩ	1/16W	VRSCY1JB564F
*	R1114	AAX17680	R.CAR.CHP	12KKΩ	1/16W	VRSCY1JB123J
*	R1115	AAX17760	R.CAR.CHP	330KΩ	1/16W	VRSCY1JB334F
*	R1116	AAX17790	R.CAR.CHP	47KΩ	1/16W	VRSCY1JB473F
*	R1117	AAX17790	R.CAR.CHP	47KKΩ	1/16W	VRSCY1JB473F
*	R1118	AAX17760	R.CAR.CHP	330KΩ	1/16W	VRSCY1JB334F
*	R1119	AAX17720	R.CAR.CHP	220KΩ	1/16W	VRSCY1JB224J
*	R1120	AAX17730	R.CAR.CHP	270KΩ	1/16W	VRSCY1JB274J
	R1121	AAX02010	R.CAR.CHP	39KΩ	1/16W	VRSCY1JB393J
*	R1122	AAX17680	R.CAR.CHP	12KΩ	1/16W	VRSCY1JB123J

* New Parts

	Schm Ref.	PART NO.	Description	Remarks		
*	R1123	AAX17680	R.CAR.CHP	12KΩ	1/16W	VRSCY1JB123J
*	R1124	AAX17710	R.CAR.CHP	2.2KΩ	1/16W	VRSCY1JB222J
*	R1125	AAX17710	R.CAR.CHP	2.2KΩ	1/16W	VRSCY1JB222J
*	R1201	AAX17750	R.CAR.CHP	33KΩ	1/16W	VRSCY1JB333F
*	R1202	AAX17690	R.CAR.CHP	120KΩ	1/16W	VRSCY1JB124F
*	R1203	AAX17750	R.CAR.CHP	33KΩ	1/16W	VRSCY1JB333F
*	R1205	AAX17850	R.CAR.CHP	82KΩ	1/16W	VRSCY1JB823J
*	R1207	AAX17830	R.CAR.CHP	68KΩ	1/16W	VRSCY1JB683J
	R1208	AAX01900	R.CAR.CHP	220Ω	1/16W	VRSCY1JB221J
	R1209	AAX01730	R.CAR.CHP	100Ω	1/16W	VRSCY1JB101J
	R1210	AAX01900	R.CAR.CHP	220Ω	1/16W	VRSCY1JB221J
	R1211	AAX01900	R.CAR.CHP	220Ω	1/16W	VRSCY1JB221J
	R1212	AAX02030	R.CAR.CHP	47Ω	1/16W	VRSCY1JB470J
	R1214	AAX01760	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103J
	R1215	AAX01790	R.CAR.CHP	1MΩ	1/16W	VRSCY1JB105J
	R1217	AAX01830	R.CAR.CHP	150Ω	1/16W	VRSCY1JB151J
	R1219	AAX02040	R.CAR.CHP	47KΩ	1/16W	VRSCY1JB473J
	R1221	AAX02040	R.CAR.CHP	47KΩ	1/16W	VRSCY1JB473J
	R1222	AAX02040	R.CAR.CHP	47KΩ	1/16W	VRSCY1JB473J
*	R1230	AAX17660	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103F
*	R1231	AAX17660	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103F
	R1232	AAX01710	R.CAR.CHP	0Ω	1/16W	VRSCY1JB000J
	R1240	AAX01710	R.CAR.CHP	0Ω	1/16W	VRSCY1JB000J
	R1261	AAX01910	R.CAR.CHP	22KΩ	1/16W	VRSCY1JB223J
	R1262	AAX01910	R.CAR.CHP	22KΩ	1/16W	VRSCY1JB223J
	R1263	AAX01910	R.CAR.CHP	22KΩ	1/16W	VRSCY1JB223J
	R1264	AAX01910	R.CAR.CHP	22KΩ	1/16W	VRSCY1JB223J
	R1265	AAX01910	R.CAR.CHP	22KΩ	1/16W	VRSCY1JB223J
	R1266	AAX01910	R.CAR.CHP	22KΩ	1/16W	VRSCY1JB223J
*	R1300	AAX17910	R.CAR.CHP	8.2Ω	1/10W	VRSTV2AB8R2J
	R1301	AAX01720	R.CAR.CHP	10Ω	1/16W	VRSCY1JB100J
*	R1304	AAX17870	R.CAR.CHP	150Ω	1/10W	VRSTV2AB151J
	R1401	AAX01940	R.CAR.CHP	2.7KΩ	1/16W	VRSCY1JB272J
*	R1403	AAX17780	R.CAR.CHP	470Ω	1/16W	VRSCY1JB471J
	R1405	AAX01780	R.CAR.CHP	100KΩ	1/16W	VRSCY1JB104J
	R1406	AAX01760	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103J
	R1407	AAX01980	R.CAR.CHP	3.3KΩ	1/16W	VRSCY1JB332J
	R1408	AAX01980	R.CAR.CHP	3.3KΩ	1/16W	VRSCY1JB332J
	R1409	AAX01710	R.CAR.CHP	0Ω	1/16W	VRSCY1JB000J
*	R1414	AAX17720	R.CAR.CHP	220KΩ	1/16W	VRSCY1JB224J
	R1415	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1417	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1418	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1420	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1424	AAX02040	R.CAR.CHP	47KΩ	1/16W	VRSCY1JB473J
	R1430	AAX01760	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103J
	R1435	AAX01760	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103J
	R1440	AAX01730	R.CAR.CHP	100Ω	1/16W	VRSCY1JB101J
	R1441	AAX02040	R.CAR.CHP	47KΩ	1/16W	VRSCY1JB473J
	R1443	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1444	AAX01760	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103J
	R1460	AAX01760	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103J
	R1461	AAX01760	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103J

* New Parts

P.C.B. MD MAIN

	Schm Ref.	PART NO.	Description	Remarks		
	R1463	AAX01760	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB103J
	R1510	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1511	AAX03050	R.CAR.CHP	8.2KΩ	1/16W	VRSCY1JB822J
	R1513	AAX03050	R.CAR.CHP	8.2KΩ	1/16W	VRSCY1JB822J
	R1515	AAX01870	R.CAR.CHP	1.8KΩ	1/16W	VRSCY1JB182J
	R1516	AAX01870	R.CAR.CHP	1.8KΩ	1/16W	VRSCY1JB182J
	R1517	AAX02030	R.CAR.CHP	47Ω	1/16W	VRSCY1JB470J
	R1518	AAX02030	R.CAR.CHP	47Ω	1/16W	VRSCY1JB470J
	R1520	AAX02040	R.CAR.CHP	47KΩ	1/16W	VRSCY1JB473J
	R1521	AAX01800	R.CAR.CHP	120Ω	1/16W	VRSCY1JB121J
	R1523	AAX02040	R.CAR.CHP	47KΩ	1/16W	VRSCY1JB473J
	R1526	AAX03020	R.CAR.CHP	6.8KΩ	1/16W	VRSCY1JB682J
	R1527	AAX02040	R.CAR.CHP	47KΩ	1/16W	VRSCY1JB473J
	R1529	AAX01900	R.CAR.CHP	220Ω	1/16W	VRSCY1JB221J
	R1530	AAX01710	R.CAR.CHP	0Ω	1/16W	VRSCY1JB000J
	R1532	AAX01980	R.CAR.CHP	3.3KΩ	1/16W	VRSCY1JB332J
	R1533	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1534	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1535	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1536	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1537	AAX01900	R.CAR.CHP	220Ω	1/16W	VRSCY1JB221J
	R1538	AAX01900	R.CAR.CHP	220Ω	1/16W	VRSCY1JB221J
	R1539	AAX01800	R.CAR.CHP	120Ω	1/16W	VRSCY1JB121J
	R1600	AAX01710	R.CAR.CHP	0Ω	1/16W	VRSCY1JB000J
*	R1601	AAX17770	R.CAR.CHP	3.9KΩ	1/16W	VRSCY1JB392F
*	R1605	AAX17820	R.CAR.CHP	10KΩ	1/16W	VRSCY1JB682F
	R1606	AAX01710	R.CAR.CHP	0Ω	1/16W	VRSCY1JB000J
*	R1612	AAX17700	R.CAR.CHP	150KΩ	1/16W	VRSCY1JB154F
*	R1614	AAX17670	R.CAR.CHP	100KΩ	1/16W	VRSCY1JB104F
	R1616	AAX01910	R.CAR.CHP	22KΩ	1/16W	VRSCY1JB223J
	R1617	AAX01710	R.CAR.CHP	0Ω	1/16W	VRSCY1JB000J
	R1618	AAX01960	R.CAR.CHP	30KΩ	1/16W	VRSCY1JB303J
	R1620	AAX01720	R.CAR.CHP	10Ω	1/16W	VRSCY1JB100J
	R1621	AAX03020	R.CAR.CHP	6.8KΩ	1/16W	VRSCY1JB682J
	R1622	AAX01910	R.CAR.CHP	22KΩ	1/16W	VRSCY1JB223J
	R1623	AAX01910	R.CAR.CHP	22KΩ	1/16W	VRSCY1JB223J
	R1624	AAX03020	R.CAR.CHP	6.8KΩ	1/16W	VRSCY1JB682J
	R1701	AAX02010	R.CAR.CHP	39KΩ	1/16W	VRSCY1JB393J
	R1702	AAX01960	R.CAR.CHP	30KΩ	1/16W	VRSCY1JB303J
*	R1703	AAX17650	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102F
*	R1704	AAX17740	R.CAR.CHP	3.3KΩ	1/16W	VRSCY1JB332F
	R1705	AAX03040	R.CAR.CHP	820Ω	1/16W	VRSCY1JB821J
	R1706	AAX02010	R.CAR.CHP	39KΩ	1/16W	VRSCY1JB393J
	R1707	AAX01790	R.CAR.CHP	1MΩ	1/16W	VRSCY1JB105J
	R1708	AAX01750	R.CAR.CHP	1KΩ	1/16W	VRSCY1JB102J
	R1709	AAX02010	R.CAR.CHP	39KΩ	1/16W	VRSCY1JB393J
	R1710	AAX03030	R.CAR.CHP	680KΩ	1/16W	VRSCY1JB684J
	R1711	AAX03100	R.CAR.CHP	12Ω	1/10W	VRSTV2AB120J
	R1712	AAX01950	R.CAR.CHP	27KΩ	1/16W	VRSCY1JB273J
	R1714	AAX03100	R.CAR.CHP	12Ω	1/10W	VRSTV2AB120J
	R1716	AAX01780	R.CAR.CHP	100KΩ	1/16W	VRSCY1JB104J
	R1801	AAX01930	R.CAR.CHP	270Ω	1/16W	VRSCY1JB271J
*	R1802	AAX17800	R.CAR.CHP	56KΩ	1/16W	VRSCY1JB563F

⋆ New Parts

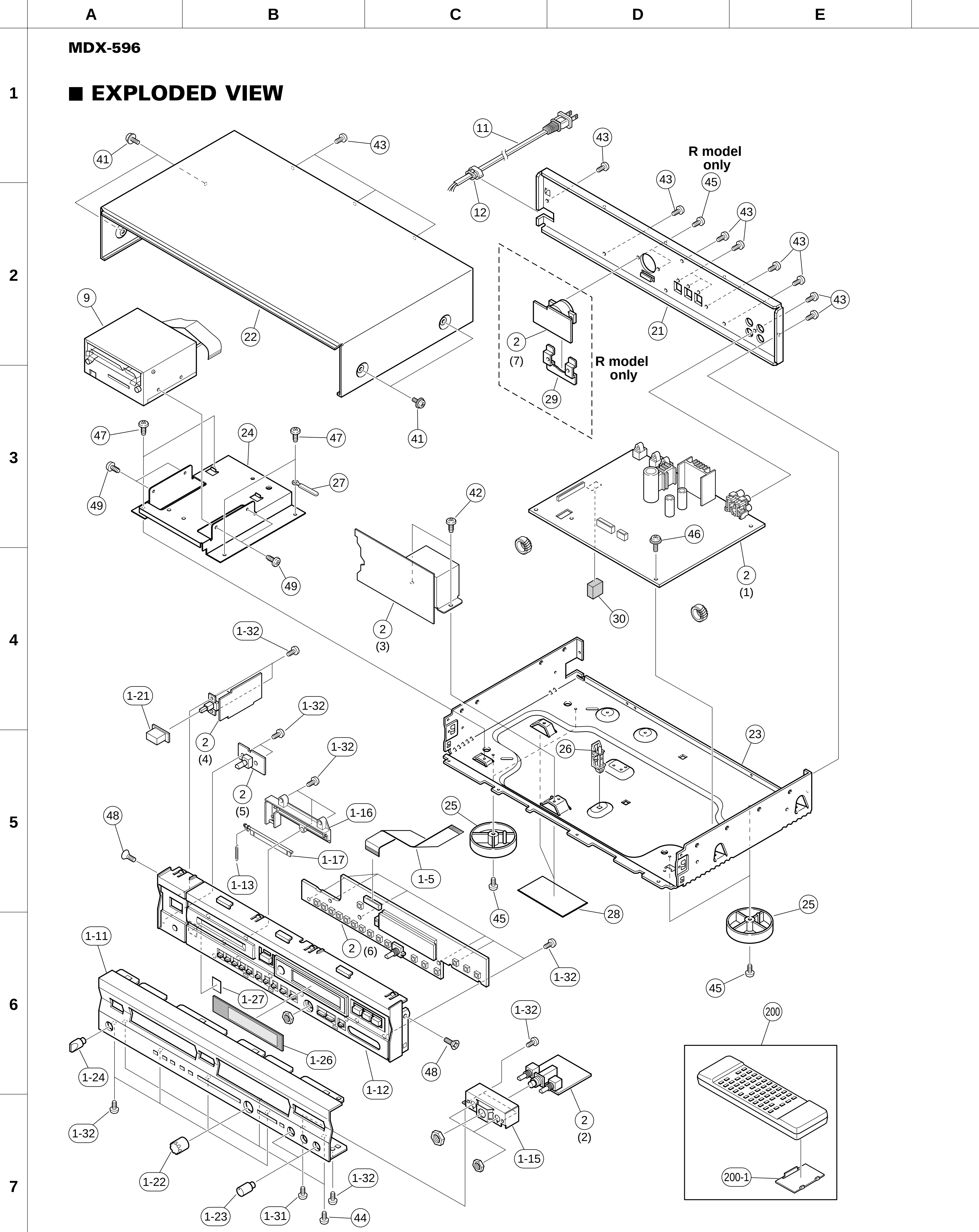
CHIP RESISTORS

	Schm Ref.	PART NO.	Description	Remarks		
*	R1803	AAX17750	R.CAR.CHP	33KΩ	1/16W	VRSCY1JB333F
	R1804	AAX02000	R.CAR.CHP	390Ω	1/16W	VRSCY1JB391J
	R1805	AAX01930	R.CAR.CHP	270Ω	1/16W	VRSCY1JB271J
	R1806	AAX03070	R.CAR.CHP	1Ω	1/8W	VRSTQ2BB1R0J
	R1807	AAX01950	R.CAR.CHP	27KΩ	1/16W	VRSCY1JB273J
	R1808	AAX01870	R.CAR.CHP	1.8KΩ	1/16W	VRSCY1JB182J
	R1809	AAX03070	R.CAR.CHP	1Ω	1/8W	VRSTQ2BB1R0J
	R1811	AAX03070	R.CAR.CHP	1Ω	1/8W	VRSTQ2BB1R0J
*	R1930	AAX17890	R.CAR.CHP	390Ω	1/10	VRSTV2AB391J
*	R1931	AAX17900	R.CAR.CHP	560Ω	1/10	VRSTV2AB561J
*	R1932	AAX17860	R.CAR.CHP	120Ω	1/10	VRSTV2AB121J
*	R1933	AAX17880	R.CAR.CHP	270Ω	1/10	VRSTV2AB271J
	XL1201	AAX01660	RSNR.CRYS			RCRSC0001AWZZ
	R1512	AAX03130	R.CAR.CHP	47Ω	1/10W	VRSTV2AB470J
	R1524	AAX03090	R.CAR.CHP	0Ω	1/10W	VRSTV2AB000J
	R1525	AAX03090	R.CAR.CHP	0Ω	1/10W	VRSTV2AB000J
	R1528	AAX03090	R.CAR.CHP	0Ω	1/10W	VRSTV2AB000J
	R1540	AAX03090	R.CAR.CHP	0Ω	1/10W	VRSTV2AB000J
*	SW1930	AAX17370	SW	PUSH TYPE		QSWP0011AWZZ
*	SW1931	AAX17380	SW	PUSH TYPE		QSWP0012AWZZ
*	SW1932	AAX17360	SW	PUSH TYPE		QSWM0007AWZZ
*	SW1933	AAX17360	SW	PUSH TYPE		QSWM0007AWZZ
*	SW1934	AAX17360	SW	PUSH TYPE		QSWM0007AWZZ
	SW1936	AAX02400	SW	SLIDE TYPE		QSWM0157AFZZ

⋆ New Parts

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■ EXPLODED VIEW



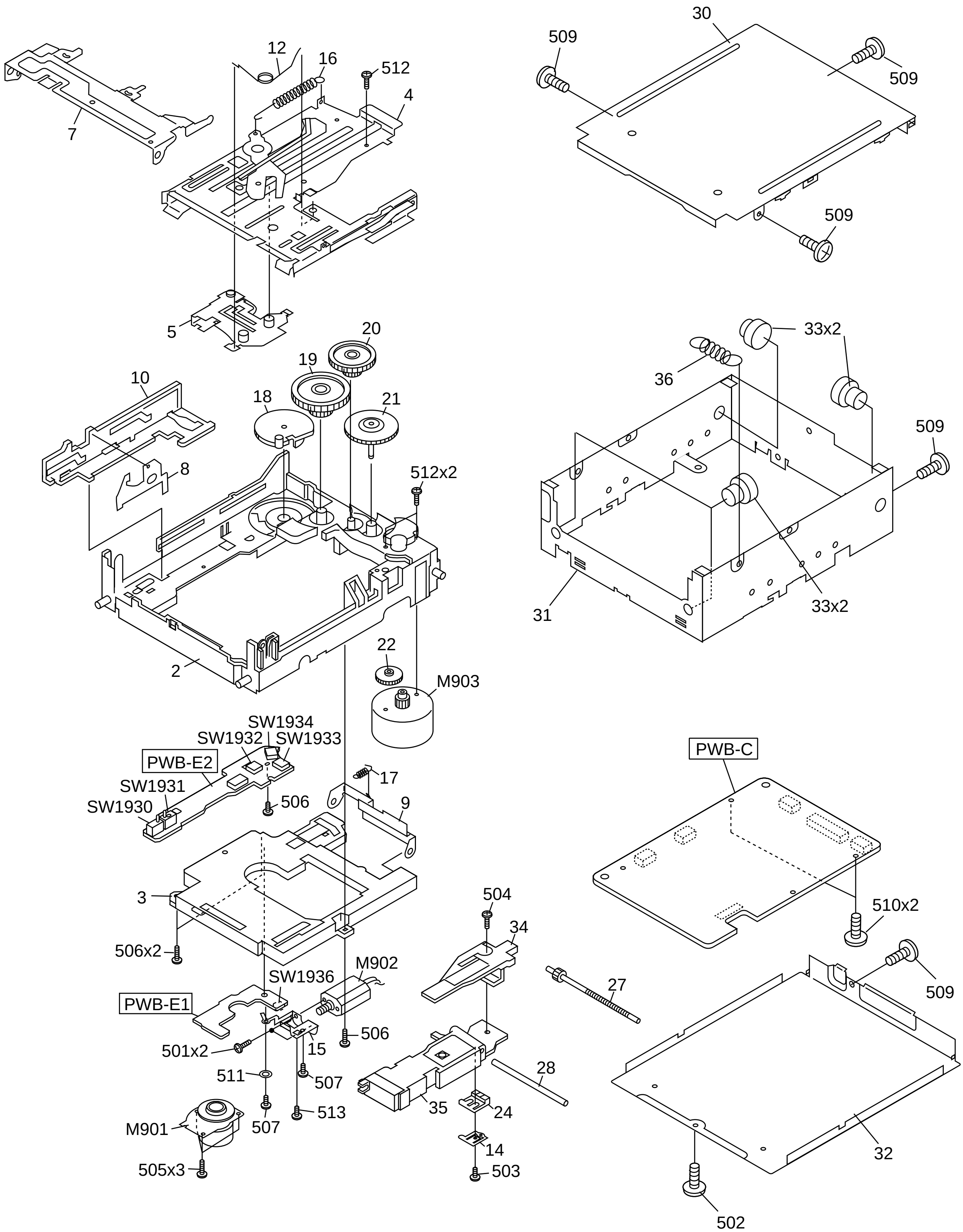
■ MECHANICAL PARTS

	Ref. No.	PART NO.	Description		Remarks	Markets
	1-5	MF119200	FLEXIBLE FLAT CABLE	19P 200mm		
*	1-11	V5235500	FRONT PANEL		BL	
*	1-11	V5235600	FRONT PANEL		TI	
*	1-12	V3080600	PANEL, SUB		BL	
*	1-12	V3080700	PANEL, SUB		TI	
	1-13	V3082300	SPRING			
	1-15	V3081800	SUPPORT, VR			
*	1-16	V3082200	GRILL, LID		BL	
*	1-16	V3204800	GRILL, LID		TI	
*	1-17	V3080800	LID, MD		BL	
*	1-17	V3080900	LID, MD		TI	
	1-21	VZ494400	BUTTON	11x22	BL	
	1-21	VZ494500	BUTTON	11x22	TI	
	1-22	V2047400	KNOB	D14ED	BL	
	1-22	V2047500	KNOB	D14ED	TI	
	1-23	V3322700	KNOB, ED		BL	
*	1-23	V3322800	KNOB, ED		TI	
	1-24	VR308400	KNOB, VR	D10	BL	
	1-24	VU114800	KNOB, VR	D10	TI	
	1-26	V3081500	WINDOW PANEL, LID			
	1-27	V2269200	DAMPER	T1x13x13		
	1-31	VN413300	BIND HEAD BONDING B-T. SCREW	3x8 MFZN2-BL		
	1-32	EP630290	BIND HEAD P-TITE SCREW	3x6 FCRM3-BL		
*	2	V5731000	P.C.B. ASS'Y	MAIN		(R)
*	2	V5731100	P.C.B. ASS'Y	MAIN		(A)
*	2	V5731200	P.C.B. ASS'Y	MAIN		(BG)
*	9	V5063300	MD RECORDER UNIT	MDM-07A		
⚠	11	V2296800	POWER CORD ASS'Y			(A)
⚠	11	VN363700	POWER CORD ASS'Y			(G)
⚠	11	VV437300	POWER CORD ASS'Y			(B)
⚠	11	VZ542500	POWER CORD ASS'Y			(R)
	12	V2438700	CORD STOPPER	10P1		
*	21	V5236000	REAR PANEL			(R)
*	21	V5236100	REAR PANEL			(A)
*	21	V5236300	REAR PANEL			(BG)
	22	VZ151900	TOP COVER		BL	
	22	VZ152000	TOP COVER		TI	
	23	VZ151800	CHASSIS, MAIN	ALL		
*	24	V5235300	SUPPORT, MECH			
	25	VQ780300	LEG	D60xH16		
	26	V3205000	CARD EDGE SPACER	KGES-18		
	27	CB836200	BINDING TIE	S-70B		
*	28	V6204200	SHEET			
	29	VS257300	PLATE, R			(R)
	30	V2113100	SPACER			
	41	21991500	PW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	BL	
	41	VH313200	BW HEAD S-TITE SCREW	4x8-10 FNM3-BL	TI	
	42	V2728500	BIND HEAD S-TITE SCREW	4x7 MFZN2-BL		
	43	VN413300	BIND HEAD BONDING B-T. SCREW	3x8 MFZN2-BL		
	44	VE190700	BIND HEAD BONDING B-T. SCREW	3x6 FCRM3-BL		
	45	EP600250	BIND HEAD B-TITE SCREW	3x8 ZMC2-Y		
	46	VT669300	PW HEAD B-TITE SCREW	3x8-8 MFC2		
	47	EP600530	BIND HEAD S-TITE SCREW	3x8 ZMC2-BL		
	48	VF378100	FLAT HEAD SCREW	3x6 ZMC2-Y		
	49	V2500400	BIND HEAD SCREW	3x3 MFZN2-BL		
			ACCESSORIES			
	200	VZ480500	REMOTE CONTROL TRANSMITTER			
	200-1	CX680450	LID			
		V3541900	OPTICAL CABLE	1P		
		VY952200	PIN-PLUG CORD	2P 1.0m		
			BATTERY, MANGANESE	SUM-3,AA,R06		

* New Parts

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■ EXPLODED VIEW (MD Recorder Unit)

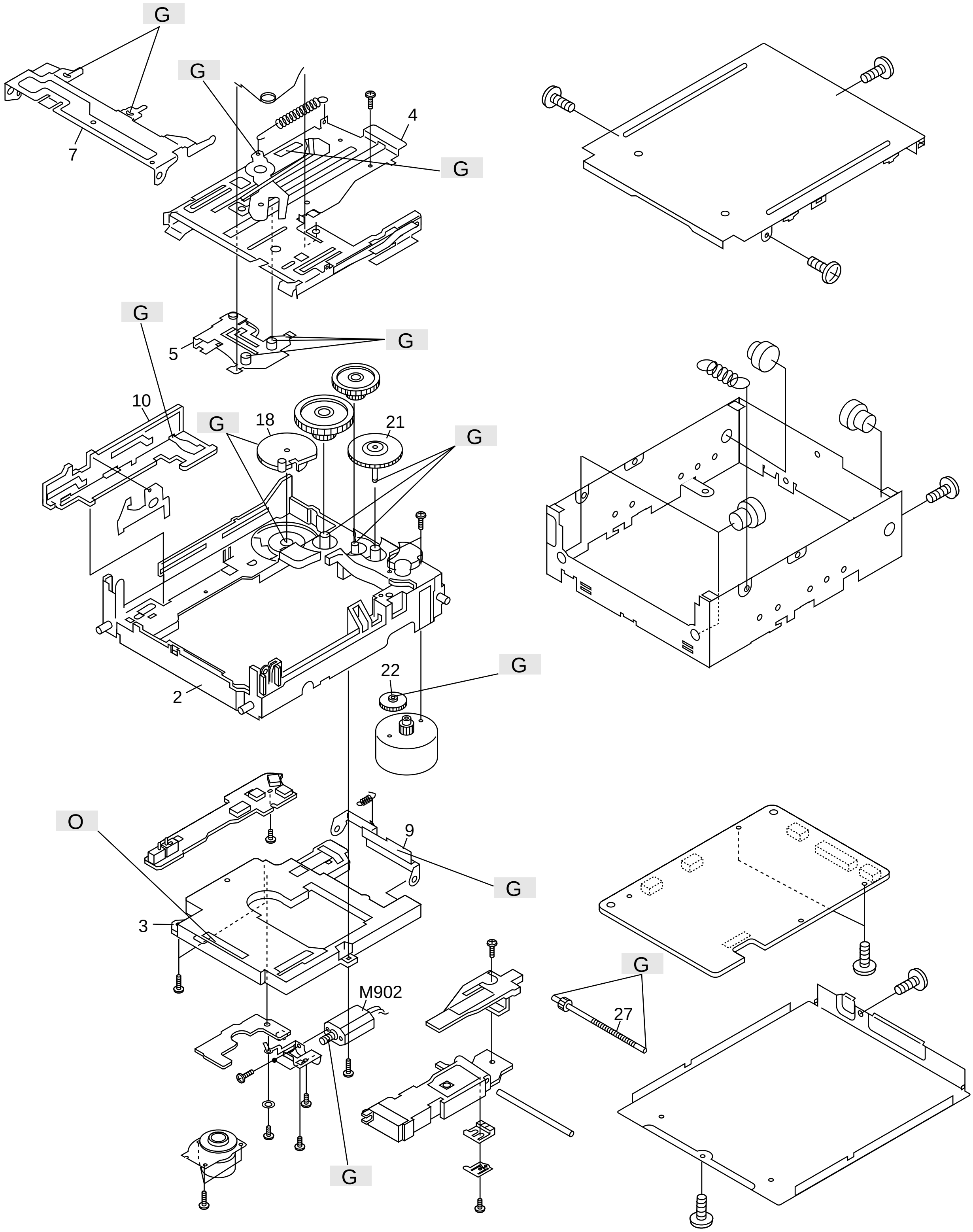


■ MECHANICAL PARTS (MD Recorder Unit)

	Ref. No.	PART NO.	Description	Spec	Remarks	Markets
		V5063300	MD RECORDER UNIT		V5063300	
*	2	AAX16830	LD BASE		LCHSM0089AWZZ	
*	3	AAX16840	MD BASE		LCHSM0090AWZZ	
*	4	AAX16860	CARTRIDGE HOLDER ASSY		LHLDX3007AWM1	
*	5	AAX16980	SLIDER LEVER ASSY		MLEVF0051AWM1	
*	7	AAX17100	HOLDER ARM		MLEVF0046AWFW	
*	8	AAX16960	SWITCH PLATE		MLEVF0047AWFW	
*	9	AAX16820	H/A SHIFT ARM		MLEVF0048AWFW	
*	10	AAX16870	CAM PLATE LEVER		MLEVP0095AWZZ	
*	12	AAX17150	SPRING,ROADING		MSPRD0132AWFJ	
*	14	AAX16890	SPRING,GRIP		MSPRP0030AWFJ	
*	15	AAX16950	SPRING,SHAFT		MSPRP0031AWFJ	
*	16	AAX17160	SPRING,ROADING ARM		MSPRT0031AWFJ	
*	17	AAX16940	SPRING,SHIFT ARM		MSPRT0032AWFJ	
*	18	AAX17170	LOADING GEAR (A)	A	NGERH0085AWZZ	
*	19	AAX17110	MIDDLE GEAR (A)	A	NGERH0086AWZZ	
*	20	AAX17120	MIDDLE GEAR (B)	B	NGERH0087AWZZ	
*	21	AAX17130	MIDDLE GEAR (C)	C	NGERH0088AWZZ	
*	22	AAX17140	MIDDLE GEAR (D)	D	NGERH0089AWZZ	
*	24	AAX16900	GRIP RACK		NGERR0004AWZZ	
*	27	AAX17000	DRIVE SCREW ASSY		NSFTD0006AWM1	
*	28	AAX17090	PICK GUIDE SHAFT		NSFTM0019AWFW	
*	30	AAX16920	SEALED COVER (TOP)		PCOVS3029AWFW	
*	31	AAX16910	SEALED COVER (SIDE)		PCOVS3033AWFW	
*	32	AAX16930	SEALED COVER (BOTTOM)		PCOVS3031AWFW	
*	33	AAX16880	CUSSION		PCUSG0045AWZZ	
*	34	AAX17210	MAGNETIC HEAD		RCILH0113AFZZ	
⚠*	35	AAX17200	OPTICAL PICKUP		RCTRH8198AFZZ	
*	36	AAX16850	SPRING, GROUNDING		MSPRT0034AWFJ	
*	501	AAX17010	SCREW	M1.4x1.5	LXBZ0040AWZZ	
*	502	AAX17020	SCREW	M2.0x2	LXBZ0046AWZZ	
*	503	AAX17030	SCREW	M1.4x2	LXBZ0800AFZZ	
	504	AAX01280	SCREW	M1.7x5	LXBZ0883AFZZ	
*	505	AAX17040	SCREW	M1.4x3	LXJZ0020AWZZ	
*	506	AAX17050	SCREW	M1.7x6	LXJZ0022AWZZ	
*	507	AAX17060	SCREW	M1.4x4	LXJZ0024AWZZ	
*	509	AAX17080	SCREW	M2.0x3	XBPSD20P03K00	
	510	AAX01300	SCREW	M1.7x3	XSPSN17P03K00	
*	511	AAX17190	WASHER	1.4x0.5	XWSSD1405000	
	512	AAX03010	SCREW	M1.7x3	LXBZ0846AFZZ	
*	513	AAX17070	SCREW	M1.4x5	LXJZ0025AWZZ	
		AAX16630	FLAT CABLE	28P	QCNWK0108AFZZ	
		AAX16650	FLAT CABLE	5P	QCNWK0109AFZZ	
*	M0901	AAX16970	SPINDLE MOTOR ASSY	SPINDLE	RMOTV0025AWZZ	
*	M0902	AAX16990	SLED MOTOR ASSY	SLED	92LMTR3167BASY	
*	M0903	AAX17180	LOADING MOTOR ASSY	LOADING	92LMTR3167AASY	

* New Parts

GREASE APPLICATION DIAGRAM



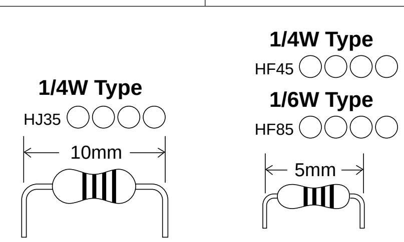
Grease

G	: Molykote PG-662
O	: HYDRO-FLUTE EP-68

Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100
1.8 Ω	HJ35 3180	❊
2.2 Ω	HJ35 3220	HF85 3220
3.3 Ω	HJ35 3330	HF85 3330
4.7 Ω	HJ35 3470	HF85 3470
5.6 Ω	HJ35 3560	HF85 3560
10 Ω	HF45 4100	HF45 4100
15 Ω	HJ35 4150	HF85 4150
22 Ω	HF45 4220	HF45 4220
27 Ω	HJ35 4270	HF85 4270
33 Ω	HF45 4330	HF45 4330
39 Ω	HJ35 4470	HF85 4390
47 Ω	HF45 4470	HF45 4470
56 Ω	HF45 4560	HF45 4560
68 Ω	HF45 4680	HF45 4680
75 Ω	HF45 4750	HF45 4750
82 Ω	HF45 4820	HF45 4820
91 Ω	HF45 4910	HF45 4910
100 Ω	HF45 5100	HF45 5100
110 Ω	HJ35 5110	HF85 5110
120 Ω	HF45 5120	HF45 5120
150 Ω	HF45 5150	HF45 5150
160 Ω	HJ35 5160	❊
180 Ω	HF45 5180	HF45 5180
200 Ω	HF45 5200	HF45 5200
220 Ω	HF45 5220	HF45 5220
270 Ω	HF45 5270	HF45 5270
330 Ω	HF45 5330	HF45 5330
390 Ω	HF45 5390	HF45 5390
430 Ω	HF45 5430	HF45 5430
470 Ω	HF45 5470	HF45 5470
510 Ω	HF45 5510	HF45 5510
560 Ω	HF45 5560	HF45 5560
680 Ω	HF45 5680	HF45 5680
820 Ω	HF45 5820	HF45 5820
910 Ω	HF45 5910	HF45 5910
1.0 kΩ	HF45 6100	HF45 6100
1.2 kΩ	HF45 6120	HF45 6120
1.5 kΩ	HF45 6150	HF45 6150
1.8 kΩ	HF45 6180	HF45 6180
2.0 kΩ	HJ35 6200	HF85 6200
2.2 kΩ	HF45 6220	HF45 6220
2.4 kΩ	HJ35 6240	HF85 6240
2.7 kΩ	HF45 6270	HF45 6270
3.0 kΩ	HF45 6300	HF45 6300
3.3 kΩ	HF45 6330	HF45 6330
3.6 kΩ	HJ35 6360	HF85 6360
3.9 kΩ	HF45 6390	HF45 6390
4.7 kΩ	HF45 6470	HF45 6470
5.1 kΩ	HF45 6510	HF45 6510
5.6 kΩ	HF45 6560	HF45 6560
6.8 kΩ	HF45 6680	HF45 6680
8.2 kΩ	HF45 6820	HF45 6820
9.1 kΩ	HF45 6910	HF45 6910

Value	1/4W Type Part No.	1/6W Type Part No.
10 kΩ	HF45 7100	HF45 7100
11 kΩ	HF45 7110	HF45 7110
12 kΩ	HJ35 7120	HF85 7120
13 kΩ	HF45 7130	HF45 7130
15 kΩ	HF45 7150	HF45 7150
18 kΩ	HF45 7180	HF45 7180
22 kΩ	HF45 7220	HF45 7220
24 kΩ	HF45 7240	HF45 7240
27 kΩ	HJ35 7270	HF85 7270
30 kΩ	HF45 7300	HF45 7300
33 kΩ	HF45 7330	HF45 7330
36 kΩ	HF45 7360	HF45 7360
39 kΩ	HF45 7390	HF45 7390
47 kΩ	HF45 7470	HF45 7470
51 kΩ	HF45 7510	HF45 7510
56 kΩ	HF45 7560	HF45 7560
62 kΩ	HF45 7620	HF45 7620
68 kΩ	HF45 7680	HF45 7680
82 kΩ	HF45 7820	HF45 7820
91 kΩ	HF45 7910	HF45 7910
100 kΩ	HF45 8100	HF45 8100
110 kΩ	HF45 8110	HF45 8110
120 kΩ	HF45 8120	HF45 8120
150 kΩ	HF45 8150	HF45 8150
180 kΩ	HF45 8180	HF45 8180
220 kΩ	HJ35 8220	HF85 8220
270 kΩ	HF45 8270	HF45 8270
300 kΩ	HF45 8300	HF45 8300
330 kΩ	HF45 8330	HF45 8330
390 kΩ	HJ35 8390	HF85 8390
470 kΩ	HF45 8470	HF45 8470
560 kΩ	HJ35 8560	HF85 8560
680 kΩ	HJ35 8680	HF85 8680
820 kΩ	HJ35 8820	HF85 8820
1.0 MΩ	HF45 9100	HF45 9100
1.2 MΩ	HJ35 9120	❊
1.5 MΩ	HJ35 9150	HF85 9150
1.8 MΩ	HJ35 9180	HF85 9180
2.2 MΩ	HJ35 9220	HF85 9220
3.3 MΩ	HJ35 9330	HF85 9330
3.9 MΩ	HJ35 9390	❊
4.7 MΩ	HJ35 9470	HF85 9470



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1992

MDX-596

YAMAHA

MDX-596